SECOND ADDENDUM - FURTHER ASSESSMENT OF SOILS CONTAINING RESIDUAL PERCHLORATE

Azusa Irwindale Study Area

Former Aerojet-General Corporation Facility

Azusa and Irwindale, California

Prepared for:

California Regional Water Quality Control Board
Los Angeles Region

RWQCB File No. 108.1692; SLIC ID. No. 2049R00

Prepared by:

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November 30, 2007

Project No. 007190.006.0

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007190.006

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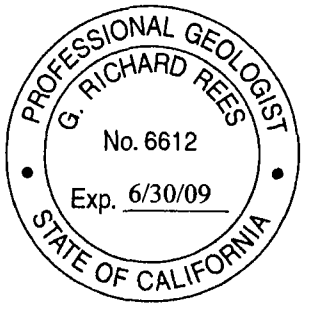

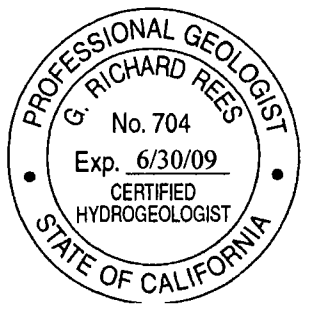

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SECOND ADDENDUM - FURTHER ASSESSMENT OF SOILS CONTAINING RESIDUAL PERCHLORATE

Azusa Irwindale Study Area
Azusa and Irwindale, California

1.0 INTRODUCTION

Geomatrix Consultants, Inc. (Geomatrix), on behalf of Aerojet-General Corporation (Aerojet), has prepared this second addendum (Second Assessment Addendum) to the Geomatrix report entitled "*Further Assessment of Perchlorate in Soils Containing Residual Perchlorate*", dated April 18, 2006, (Further Assessment Report) (Geomatrix, 2006a) and the first addendum to this report entitled "*Addendum - Further Assessment of Soils Containing Residual Perchlorate*", dated May 31, 2007 (Geomatrix, 2007b). The overall objective of the assessment is to characterize residual perchlorate in soils within the vicinity of former solid rocket propellant mixing and grinding operations within the Azusa Irwindale Study Area (AISA), in Azusa and Irwindale, California. The purpose of this Second Assessment Addendum is to present the findings of work completed in general accordance with the Third Work Plan Addendum, "*Further Assessment of Perchlorate in Soils in Areas of Concern*", dated August 17, 2007 (Third Work Plan Addendum) (Geomatrix, 2007a). Figure 1-1 shows the location of the area of investigation within the AISA. A detailed site map of the area of investigation showing properties and current property owners is provided as Figure 1-2. Information presented in this Second Assessment Addendum includes boring logs, laboratory analytical reports, summary analytical tables, isoconcentration contour maps, and cross sections associated with additional soil sampling completed in October and November 2007 to address additional site assessment activities as requested in letters from the Los Angeles Regional Water Quality Control Board (LARWQCB) dated June 21, 2007 and October 3, 2007.

1.1 SITE LOCATION AND DESCRIPTION

The area of investigation is located within the AISA, which consists of properties formerly owned or leased by Aerojet covering an area of approximately 125-acres in Azusa and Irwindale, California (Figure 1-1). The area of investigation for this assessment is located in the vicinity of former solid rocket propellant mixing and grinding operations. Properties included within the area of investigation were referenced in work plans and assessment reports by building numbers assigned by the former property owner (i.e., Building 1, 2, 3, and 4). These building numbers will also be used in this report to reference areas relative to the

building locations as they provide continuity with previous descriptions. Building numbers will also be used to refer to properties to avoid potential confusion caused by the recent street name change from Montoya Street to Avenida Padilla and the fact that several of the properties have official addresses on their property deeds which do not match the physical address of the property because of the subdivision of larger parcels. Current property owners for the area of investigation are shown on Figure 1-2 and include:

- Proficiency SGV LLC (Proficiency) owns the two western parcels in the area of investigation. The western of these two parcels has a listed address of 16120 Montoya Street, Irwindale, California 91702 (Assessor's Parcel No. 8615-021-018) and is the "Building 1 property". The eastern parcel has a listed address of 6352 N. Irwindale Avenue, Irwindale, California 91702 (Assessor's Parcel No. 8615-001-031) and is the "Building 2 property". Note that these two parcels share part of a building (Building 2) and both Building 1 and Building 2 are connected and have the same physical address of 1300 West Optical Drive, Azusa, California 91702.

- Dragonis Investments, LLC (Dragonis), owns the property referenced as "Building 3 property" and is located at 1290 W. Optical Drive, Azusa, California 91702 (Assessor's Parcel No. 8615-001-060). Dragonis leases the property to Skylock Industries, Inc., a manufacture of hatch locks for helicopters.

- The Joseph Family Trust owns the property referenced as "Building 4 property" and is located at 411 N. Aerojet Drive, Azusa, California 91702 (Assessor's Parcel No. 8615-001-059). The Joseph Family Trust leases the property to the Mortech Manufacturing (Mortech), a manufacturer of equipment used in autopsies and necropsies.

- Northrop Grumman Systems Corporation (Northrop) owns the property south of 411 N. Aerojet Drive. This property has no structures and is used by Northrop for parking. This property has a Los Angeles County Assessor's Office address listed as 1300 Optical Drive, Azusa, California 91702 (Assessor's Parcel No. 8615-001-401) but is not adjacent to Optical Drive.

1.2 BACKGROUND INFORMATION

Only background information following submittal of the May 31, 2007 "*Addendum - Further Assessment of Soils Containing Residual Perchlorate, Azusa Irwindale Study Area*",

(Assessment Addendum Report) (Geomatrix, 2007b) is provided in this Second Assessment Addendum. Background information prior to the May 31, 2007 submittal, is summarized in the Assessment Addendum Report and Further Assessment Report.

The LARWQCB provided review comments on the Assessment Addendum Report in a letter dated June 21, 2007. This letter requested that Aerojet submit a "characterization work plan" by August 17, 2007 and that Aerojet and its consultant, Geomatrix, attend a technical meeting with the LARWQCB prior to submittal of the "characterization work plan". A technical meeting was held at the LARWQCB office on July 25, 2007. Attendees included Mr. Robert Ehe, Ms. Wendy Phillips, and Dr. Kwang-il Lee, from LARWQCB; Mr. Mark Cousineau, Hazard Management Consulting representing property owner Proficiency; Mr. Scott Goulart representing Aerojet; and Mr. Grant Ohland and Mr. Richard Rees from Geomatrix. At the conclusion of the meeting, it was agreed that Aerojet and its consultants would prepare a third addendum to the work plan for additional soil sampling to address data gaps presented in the Assessment Addendum Report and present these findings in a second addendum to the Further Assessment Report. Geomatrix submitted the Third Work Plan Addendum to the LARWQCB on August 17, 2007.

On August 16, 2007, Geomatrix contacted Robert Ehe with the LARWQCB to schedule a meeting with LARWQCB, Aerojet, Geomatrix and Mortech to discuss Mortech's desire to expand the building located at 411 N. Aerojet Avenue. A meeting was held on August 28, 2007, at 411 N. Aerojet Avenue. Attendees included Mr. Robert Ehe from the LARWQCB; Mr. Benny Joseph and Mr. Gino Joseph from Mortech; Mr. Scott Goulart from Aerojet; and Mr. Grant Ohland and Mr. Richard Rees from Geomatrix.

On September 24, 2007, Aerojet submitted a response letter to the LARWQCB's letter dated June 21, 2007 that documented that the August 17, 2007 work plan addressed the additional sampling required in the LARWQCB's June 21, 2007, letter and identified an additional meeting to discuss Mortech's proposed building expansion.

A technical meeting was held at the LARWQCB office on September 26, 2007, to discuss Mortech's proposed building expansion. This meeting included discussion of addition assessment, a replacement well for groundwater monitoring well MW-01, additional sampling below the floor of Building 4, and submittal of a preliminary Remedial Design/ Remedial Action plan (RD/RA). Attendees included Mr. Robert Ehe, Mr. David Bacharowski, and Dr. Kwang-il Lee, from LARWQCB; Mr. Benny Joseph and Mr. Gino Joseph from Mortech; Mr.

Scott Goulart representing Aerojet; and Mr. Grant Ohland and Mr. Richard Rees from Geomatrix.

The LARWQCB approved the scope of work described in the Geomatrix August 17, 2007, work plan addendum in a letter dated October 3, 2007, but stipulated the following conditions for approval:

- The LARWQCB requires a minimum of four soil borings and sampling to a depth of 10 feet below ground surface (bgs) underneath the slab of Building 4 two of these borings being located near the perimeter of the original former Aerojet structure.

- The LARWQCB requires one additional intermediate-zone boring to be located north of former boring PSZB-62 and approximately 10 to 20 feet north of the southern property line of 411 N. Aerojet Avenue to be sampled at 5-foot intervals to a minimum depth of 100 feet bgs and analyzed using EPA Method 6850 for perchlorate in soil.

The additional intermediate-zone boring at the Building 4 property was added as a proposed boring as documented in the Geomatrix email to the LARWQCB dated October 12, 2007. Four borings inside Building 4 were added as documented in an electronic mail from Richard Rees with Geomatrix to the LARWQCB dated November 6, 2007. The November 6, 2007 electronic mail also reiterated that Geomatrix's current understanding of the location of Aerojet's former solid rocket propellant mixing and grinding stations does not place Building 4 over these locations.

1.3 REPORT CONTENTS

The remainder of this report describes the field methods and analytical results associated with sampling activities to address data gaps in characterization of soils containing residual perchlorate at the former in the area of investigation as outlined in the Third Work Plan Addendum and presents an updated evaluation of the lateral and vertical extent of soils affected with residual perchlorate and recommendations. A site map showing all borings and wells completed within the area of assessment is provided as Figure 1-3.

Site conditions including site geology and site hydrogeology and summary of previous investigations are the same as reported in Section 2 and Section 3 of the Further Assessment Report and are not repeated in this Second Assessment Addendum. Details of the work plan implementation are provided to document the October and November 2007 drilling and

sampling that was conducted using the sampling procedures described in the *Work Plan for Further Assessment of Perchlorate in Soils at Areas of Concern* (Work Plan) (Geomatrix, 2005a); *Work Plan Addendum for Further Assessment of Perchlorate in Soils at Areas of Concern* (Work Plan Addendum) (Geomatrix, 2005b); and the Third Work Plan Addendum.

2.0 WORK PLAN IMPLEMENTATION

Drilling and soil sample collection to address data gaps identified in the Third Work Plan Addendum began on October 18, 2007. Soil boring locations, sample depths, and analyses are those proposed in the Third Work Plan Addendum and modifications documented in Figure 2R of Geomatrix's October 12, 2007 email to the LARWQCB and Geomatrix's November 6, 2007 email to the LARWQCB, with the following exceptions:

- Intermediate-zone boring PSZB-88 was initially proposed for a depth of 40 feet bgs; however refusal was encountered in this boring at a depth of 20 feet bgs. Boring PSZB-88A was advanced approximately 3 feet east of PSZB-88 and was drilled to 40 bgs with soil samples collected to total depth.

- Deep-zone boring PDZB-21 was initially proposed for a depth of 250 feet bgs; however, refusal was encountered in this boring at a depth of 230 feet bgs with soil samples collected to 230 feet bgs.

- Near-surface soil borings, B4-2 and B4-4, located inside the building at 411 N. Aerojet Avenue (Building 4), were proposed to a depth of 10 feet bgs using hollow-stem-auger methods. Soil samples from boring B4-2 were successfully collected at 1 and 2 feet bgs and soil samples from boring B4-4 were successfully collected at 1, 2.5, and 4.5 feet bgs; however, due to refusal using hollow-stem-auger methods these borings did not reach the proposed target depth.

Including the modifications described above, drilling and soil sample collection was performed at a total of 14 locations and consisted of six shallow-zone borings advanced and sampled to 40 feet bgs (PSZB-88/88A, PSZB-89, PSZB-90, PSZB-91, PSZB-92, and PSZB-93); two intermediate-zone borings advanced and sampled to 100 feet bgs (PIZB-8 and PIZB-9); two deep-zone borings advanced and sampled to depths ranging from 200 to 230 feet bgs (PDZB-20 and PDZB-21); and four near-surface borings advanced and sampled to depths ranging from 2 to 10 feet bgs (B4-1, B4-2, B4-3, and B4-4). A total of 138 soil samples were

collected and analyzed for perchlorate using EPA Method 6850. The drilling and soil sampling program was completed on November 10, 2007.

The scope of work for this drilling and soil sampling program consisted of the following tasks:

- pre-field activities;
- drilling and soil sampling;
- equipment wash and investigative derived waste disposal;
- sample handling and analysis; and
- surveying.

The methods used during this assessment, including pre-field activities, drilling, soil sampling, sample handling and analysis, surveying, equipment wash and investigation-derived waste disposal are described in the following sections.

2.1 PRE-FIELD ACTIVITIES

The pre-field activities consisted of utility clearance, permitting, and updating the site-specific Health and Safety Plan (HSP). Specifically these activities included:

- retaining Geo*Vision* Geophysical Services, a private underground utility locator from Northridge, California, to screen the planned drilling locations for potential underground utilities or buried objects;

- marking the drilling locations and notified Underground Services Alert (USA) of the planned subsurface assessment activities;

- obtaining an encroachment permit from the City of Azusa for the boring located in the public right of way; and

- updating the project-specific HSP. A field copy of the HSP was maintained at the work site during all field activities. The HSP identified potential health and safety hazards associated with the field activities, outlined general safe work practices for personnel at the site, defined personal protective equipment requirements, and described specific measures to be undertaken in case of an emergency.

2.2 DRILLING AND LITHOLOGIC LOGGING

Geomatrix contracted with WDC Exploration and Wells (WDC), a licensed (C-57) drilling company from Montclair, California, to air-knife four of the fourteen boring locations each to a depth of 5 feet bgs. Air-knifing was done to ascertain that boring locations were free from subsurface utilities and/or obstructions prior to drilling. In addition, WDC advanced two deep-zone borings to depths ranging from 200 to 230 feet bgs and one intermediate-zone boring to a depth of 100 feet bgs between October 24 and November 5, 2007. Geomatrix contracted with BC^2 Environmental Corp. (BC^2), a licensed (C-57) drilling company from Fullerton, California, to air-knife six of the fourteen boring locations each to a depth of 5 feet bgs between October 25 and October 26, 2007. Geomatrix contracted with Layne Christensen Company (Layne), a licensed (C-57) drilling company from Fontana, California, to advance six shallow-zone borings each to a depth of 40 feet bgs and one intermediate-zone boring to a depth of 100 feet bgs between October 29 and November 6, 2007. Geomatrix contracted with Gregg Drilling & Testing Corporation (Gregg), a licensed (C-57) drilling company from Signal Hill, California, to advance four near-surface borings each to a depth of 10 feet bgs on November 10, 2007.

Drilling was performed on all near-surface borings (B4-1, B4-2, B4-3, and B4-4) using hollow-stem-auger drilling methods. Drilling was performed on all shallow-zone borings (PSZB-88/88A, PSZB-89, PSZB-90, PSZB-91, PSZB-92, and PSZB-93) and one intermediate-zone borings (PIZB-9) using dual-wall casing, air percussion, hammer drilling methods. This method uses a hammer on the drill rig to drive the casing. High pressure air is pushed down the outer casing annulus to the drill bit at the bottom of the boring and carries the cuttings out of the boring through the inner casing annulus to a cyclone separator. Both deep-zone borings (PDZB-20 and PDZB-21) were drilled using Air Rotary Casing Hammer (ARCH) method. This method drives a casing similar to the dual wall percussion hammer but it also uses a downhole drill bit attached to 4-inch outside diameter (OD) drive pipe to provide a rotational drill to grind the formation materials as the casing is advanced. Air is forced inside of the drive pipe to carry the cuttings out though the annulus between the drive pipe and casing to the cyclone separator. Boring PDZB-21 was drilled using the ARCH method with a down-hole percussion hammer with an under reamer bit (Stratex). The Stratex down-hole percussion hammer bit provides direct percussion to the formation while under reaming the drive casing to reduce friction on the outer casing. Cuttings removal is the same as with ARCH. The STRATEX bit failed during drilling of PDZB-21 preventing WDC from reaching the target depth of 250 feet bgs.

As anticipated, groundwater was not encountered in any of the borings drilled. The near-surface borings (10 feet bgs) were backfilled with high solids bentonite grout. The shallow-zone borings (40 feet bgs), deep (200 and 230 feet bgs) and intermediate-zone borings (100 feet bgs) were backfilled with bentonite chips using the drive casing as a tremie. The bentonite chips were hydrated with a continuous stream of potable water as they were placed. The surface at each boring location was patched with asphalt, with the exception of the near-surface borings inside Building 4 which were patched with concrete. A summary of the soil sampling activities is provided in the following subsections. Boring locations are shown on Figure 1-3. Soil logging activities were performed by a Geomatrix field geologist under the supervision of a California Professional Geologist. The lithology was described from cuttings from the cyclone separator and classified in accordance with the United Soil Classification System (USCS) and recorded on a soil boring log for each soil boring. Visual grain-size distribution, color, moisture content, and other pertinent characteristics were included on the soil boring log. Boring logs are provided in Appendix A.

2.3 SOIL SAMPLING

Soil samples for chemical analysis from near-surface borings B4-1 and B4-3 were collected at depths of 1, 2.5, 5, 7.5, and 10 feet bgs. Soil samples for chemical analysis from near-surface boring B4-2 were collected at 1 and 2 feet bgs and soil samples from boring B4-4 were collected at 1, 2.5, and 4.5 feet bgs. Soil samples for chemical analysis collected from shallow-zone borings PSZB-88/88A, PSZB-89, PSZB-90, PSZB-91, PSZB-92, and PSZB-93, were collected at depths of 1, 2.5, 5, 7.5 and 10 feet and then at 5-foot intervals to 40 feet bgs. Soil samples for chemical analysis collected from intermediate-zone boring PIZB-9 were collected at depths of 1, 2.5, 5, 7.5 and 10 feet, then at 5-foot intervals to 50 feet bgs and then at every 10-foot interval to 100 feet bgs. Soil borings PIZB-8, PDZB-20 and PDZB-21 also were advanced for additional vertical characterization and soil sampling began below the depth of sampling from the associated nearby boring. Soil samples for chemical analysis from intermediate-zone boring PIZB-8, were collected at depths of and 45 and 50 feet bgs and then at every 10-foot interval to 100 feet bgs. Soil samples for chemical analysis from deep-zone boring PDZB-20, were collected beginning at a depth of 110 feet and then at every 10-foot interval to 200 feet bgs. Soil samples for chemical analysis from deep-zone boring PDZB-21, were collected at depths of 35, 40, 45, and 50 feet bgs and then at every 10-foot interval to 230 feet bgs.

In general, soil samples from the upper 1 to 5 feet of each soil boring were collected using either a hand trowel or by hand augering to ensure sample retrieval. Soil samples collected

below 5 feet within the borehole were collected at the desired depths from the cyclone separator as described in the Work Plan Addendum (Geomatrix, 2005b), with the exception of the borings advanced inside Building 4 (B4-1 through B4-4). Soil samples collected from borings drilled inside Building 4 were collected using split-spoon sampling techniques.

2.4 SAMPLE HANDLING AND ANALYSIS

Soil samples were collected and placed in 4-oz. glass jars, labeled, placed in resealable bags, and stored in a cooler with ice. All samples were handled and transported under Geomatrix chain-of-custody procedures and sent by lab courier to Calscience Environmental Laboratory (Calscience), in Garden Grove, California for analysis using EPA Method 6850.

2.5 SURVEYING

All borings were surveyed (vertical and horizontal) by Calvada Surveys, a licensed surveyor in the State of California, and referenced to mean sea level and the California State Plane Coordinate System. The survey was tied-in to the existing wells and borings previously surveyed at the Site. The survey data are provided in Appendix B.

2.6 EQUIPMENT WASH AND INVESTIGATION-DERIVED WASTE

All downhole drilling equipment was steam-cleaned prior to use and between soil boring locations. The drillers set up a decontamination station west of Building 4 and collected the water in DOT approved 55-gallon drums. Between soil sampling intervals, the sampling equipment was washed with a detergent-water solution, rinsed with potable water and then rinsed again with deionized water.

Soil cuttings generated during sampling activities were temporarily contained in roll-off bins. The roll-off bins are in the process of being transported off site by Belshire Environmental, Inc. to Waste Management's Kettleman Hills permitted waste disposal facility.

3.0 FIELD ASSESSMENT RESULTS

This section summarizes the results of the data collection activities described in the Third Work Plan Addendum and modifications documented in Geomatrix's October 12, 2007, and November 6, 2007 email to the LARWQCB. The following subsections describe lithologic logging, soil sampling results, an assessment of data quality, and an evaluation of the distribution of perchlorate in soils in the area of investigation.

3.1 LITHOLOGIC LOGGING

Consistent with the results of prior lithologic logging within the AISA, sediments encountered during the drilling of the borings described in this Second Assessment Addendum indicated sediments comprised of zones of gravel and sand. Lithologic descriptions of soil and drill cuttings from the borings are presented on the boring logs in Appendix A. As expected given the depth to groundwater within the AISA, saturated conditions were not encountered in any of the borings which extended to a maximum total depth of 230 feet bgs.

3.2 SOIL SAMPLING RESULTS

A description and analytical results for soil samples collected during this phase of soil sampling activities is provided below. All soil samples submitted were analyzed for perchlorate using EPA Method 6850. Soil sample analytical results from October and November 2007 assessment are summarized in Table 3-1. The laboratory analytical reports and chain-of-custody forms for this assessment are provided in Appendix C. An oversized plate showing perchlorate concentrations in soil samples collected during this and previous assessments at each boring location is provided as Plate 1. A summary of findings from the October and November 2007 assessment is summarized below by the areas identified as data gaps in the Third Work Plan Addendum.

3.2.1 Horizontal Extent of Perchlorate in Area North of Building 3

Further assessment of the horizontal extent of perchlorate in the area north of Building 3 was necessary due to detections of perchlorate in boring PSZB-84 as high as 520 micrograms per kilogram (µg/kg) at a depth of 5 feet bgs and in boring PSZB-75 at a concentration of 54 µg/kg at 7.5 feet bgs in soil samples collected in March/April 2007. To address this data gap, three borings were drilled to 40 feet bgs in this area to evaluate the horizontal extent of perchlorate in soil as shown on Figure 1-3. PSZB-88/88A was advanced approximately 85 feet east of PSZB-75 and approximately 50 feet north of PSZB-84; PSZB-89 was advanced approximately 100 feet east of PSZB-84; and PSZB-90 was advanced approximately 50 feet west of PSZB-84.

Soil analytical results from PSZB-88/88A indicated perchlorate concentrations of 65 and 36 µg/kg at depths of 5 and 7.5 feet bgs, respectively. Perchlorate was not detected above the laboratory reporting limit of 6 µg/kg in samples collected from this boring at depths of 1 and 2.5 feet bgs and in the interval from 10 to 40 feet bgs. Soil analytical results from PSZB-89 indicated perchlorate concentrations of 9.4 and 12 µg/kg at depths of 1 and 30 feet bgs, respectively. Perchlorate was not detected above the laboratory reporting limit of 6 µg/kg in samples collected from this boring in the interval from 2.5 to 25 feet bgs and at depths of 35

and 40 feet bgs. With only one exception (65 µg/kg at 5 feet bgs in PSZB-88/88A), no soil samples collected from borings PSZB-88/88A and PSZB-89 had reported perchlorate concentrations greater than 40 µg/kg. Soil analytical results from PSZB-90 indicated perchlorate concentrations ranging from 86 to 9,800 µg/kg from 1 to 40 feet bgs. The highest concentration of perchlorate was detected at a depth of 5 feet bgs in this boring. Perchlorate concentrations at the 35- and 40-foot sample in this boring were 650 and 230 µg/kg, respectively.

The horizontal extent of the occurrence of perchlorate in soils in the area north and northeast of Building 3 along Optical Drive appears to be adequately characterized by soil analytical results from borings to the north (PSZB-88/88A) and northeast (PSZB-89).

3.2.2 Vertical Extent of Perchlorate in Area North of Building 3

Further assessment of the vertical extent of perchlorate in the area north of Building 3 was necessary due to perchlorate concentrations of 270 and 250 µg/kg in the deepest samples (depths of 35 and 40 feet bgs, respectively) in PSZB-84 in soil samples collected in March/April 2007. In addition, perchlorate was detected in soil at a concentration of 79 µg/kg in the deepest sample (depth of 100 feet bgs) collected in intermediate-zone boring PIZB-7. To address this data gap, one intermediate-zone boring, PIZB-8, was advanced adjacent to boring PSZB-84 and one deep-zone boring, PDZB-20, was advanced adjacent to boring PIZB-7 to characterize the vertical extent of perchlorate in this area as shown on Figure 1-3. Boring PDZB-20 was drilled to a depth of 200 feet bgs and soil samples were collected from 110 feet bgs to total depth of the boring. Boring PIZB-8 was drilled to a depth 100 feet bgs and soil samples were collected from 45 feet bgs to total depth of the boring.

Soil analytical results from PIZB-8 indicated perchlorate concentrations ranging from 77 to 1,400 µg/kg in the interval from 45 to 100 feet bgs. Soil analytical results from PDZB-20 indicated perchlorate concentrations ranging from 69 to 670 µg/kg in the interval from 110 to 200 feet bgs.

3.2.3 Lateral Extent of Perchlorate in Deeper Soils South of Building 4

Further assessment of the lateral extent of perchlorate in deeper soils south of Building 4 was necessary due to detectable perchlorate concentrations of up to 690 µg/kg in the deeper soils (greater that 200 feet bgs) identified in boring PDZB-19 drilled in March/April 2007. To address this data gap, one deep-zone boring, PDZB-21, was advanced approximately 50 feet southeast of boring PDZB-19 and one intermediate-zone boring, PIZB-9, was advanced

approximately 100 feet south-southwest of boring PDZB-19 to characterize the lateral extent of perchlorate in deeper soils in this area as shown on Figure 1-3. Boring PDZB-21 was drilled to a depth of 230 feet bgs and soil samples were collected from 35 feet bgs to total depth of the boring. Boring PIZB-9 was drilled to a depth 100 feet bgs and soil samples were collected from 1 foot bgs to total depth of the boring.

Soil analytical results from PDZB-21 indicated perchlorate concentrations ranging from 79 to 700 µg/kg in the interval from 35 to 230 feet bgs with the highest detected perchlorate concentration in the sample collected from a depth of 210 feet bgs. Soil analytical results from PIZB-9 indicated perchlorate concentrations of 120, 58, and 67 µg/kg at depths of 1, 2.5, and 5 feet bgs, respectively. Perchlorate was not detected above the laboratory reporting limit of 6 µg/kg in samples collected from this boring at depths of 7.5, 15, and 25 feet bgs. With only one exception (54 µg/kg at 45 feet bgs), no soil samples collected from boring PIZB-9 had reported perchlorate concentrations greater than 40 µg/kg from the interval of 7.5 to 100 feet bgs.

3.2.4 Occurrence of Perchlorate West and South of Building 2

Three shallow-zone borings, PSZB-91, PSZB-92, and PSZB-93 were advanced to the west and south of Building 2 to characterize the extent of perchlorate in this area as shown on Figure 1-3. Borings PSZB-91, PSZB-92, and PSZB-93 were drilled to 40 feet bgs and soil samples were collected at depths of 1, 2.5, 5, 7.5, and 10 feet, then at 5-foot intervals to the total depths of the borings.

Soil analytical results from PSZB-91 indicated a perchlorate concentration of 6.1 µg/kg at a depth of 30 feet bgs. Perchlorate was not detected above the laboratory reporting limit of 6 µg/kg in samples collected from this boring in the interval from 1 to 25 feet bgs and at depths of 35 and 40 feet bgs. No soil samples collected from boring PSZB-91 had reported perchlorate concentrations greater than 40 µg/kg. Soil analytical results from PSZB-92 indicated perchlorate concentrations ranging from 21 to 120 µg/kg in the interval from 20 to 40 feet bgs. Perchlorate was not detected above the laboratory reporting limit of 6 µg/kg in samples collected from boring PSZB-92 in the interval from 1 to 15 feet bgs. Soil analytical results from PSZB-93 indicated perchlorate concentrations ranging from 39 to 300 µg/kg from 1 to 40 feet bgs. The highest concentrations of perchlorate were detected at depths of 2.5 and 5 feet bgs in this boring. Perchlorate concentrations at the 35- and 40-foot sample in this boring were 99 and 72 µg/kg, respectively.

3.2.5 Potential Occurrence of Perchlorate Underneath the Slab of Building 4

Four near-surface borings, B4-1, B4-2, B4-3, and B4-4 were advanced underneath the slab of Building 4 to characterize the extent of perchlorate in this area as shown on Figure 1-3. Borings B4-1 and B4-3 were drilled to 10 feet bgs and soil samples were collected at depths of 1, 2.5, 5, 7.5, and 10 feet bgs. Boring B4-2 was drilled to 2 feet bgs and soil samples were collected at 1- and 2-feet bgs. Boring B4-4 was drilled to 4.5 feet bgs and soil samples were collected at depths of 1, 2.5 and 4.5 feet bgs.

Soil analytical results from borings advanced beneath the slab of Building 4 indicated perchlorate concentrations ranging from 11 to 3,000 µg/kg from 1 to 10 feet below the building concrete slab. The highest concentrations of perchlorate were detected in soil samples within the upper 5 feet (3,000 µg/kg at a depth of 5 feet in B4-3 and 1,400 µg/kg in B4-4 at a depth of 2.5 feet). Soil samples collected at depths greater than 5 feet, where collected, indicated relatively lower concentrations (62 µg/kg in soil sample collected at a depth of 10 feet at B4-3 and 17 µg/kg in a soil sample collected at a depth of 10 feet at B4-1.)

3.3 Data Quality Assessment

The field quality assurance (QA) program was in conformance with Geomatrix field protocols and standard laboratory Quality Control (QC) procedures. Laboratory reports for precision, accuracy, generated by Calscience, are provided in the laboratory reports in Appendix C. A discussion of the field and laboratory QA program is provided below.

Field QC

A sample of the rinsate of distilled water poured over the steam cleaned drill casing or auger from each of the drilling contractors prior to drilling their first boring. Samples were collected from drilling equipment used by WDC before drilling PDZB-8, (sample identification 20071024-EB) from Layne prior to drilling PSZB-88 (20071029-EB), and from Gregg prior to drilling B4-2 (20071110-EB). Analyses of these samples for perchlorate did not indicate the presence of perchlorate in the rinsate samples above the laboratory reporting limit of 3 micrograms per liter µg/L (Table3-2). Laboratory analytical reports of the equipment rinse samples are provided in Appendix C.

Laboratory QA

The laboratory QA program included data package completeness, laboratory case narrative, chain-of-custody forms, analytical method holding time requirements, method blanks, reagent

and matrix spikes, matrix spike duplicates, and laboratory control samples (LCS). The QA program also consists of data validation performed by a qualified chemist in accordance with U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA/540/R-99/008 (U.S. EPA, 2002). This review included checking QC values provided on the laboratory QC forms to the method QC criteria. All laboratory QC criteria were within acceptable limits.

3.4 DISTRIBUTION OF PERCHLORATE IN SOILS

The distribution of perchlorate in soil samples collected during the October and November 2007 soil sampling activities were evaluated along with data collected from previous sampling events using the same methodology presented in the April 18, 2006 Further Assessment Report. This methodology utilizes a three-dimensional geospatial modeling program, EarthVision®, to interpolate the lateral and vertical extent of observed perchlorate concentrations. Soil sampling results at each borehole location and discrete sampling depth were input into the EarthVision® software for interpolation of perchlorate concentrations in three-dimensions. Following the development of a three-dimensional representation of the distribution of residual perchlorate in soils using the EarthVision® software, various perspectives of the lateral and vertical extent of perchlorate were evaluated using all soil sampling results collected to date within the area of investigation. The resulting interpolated perchlorate concentrations at depth intervals of 0 to 20 feet, 20 to 40 feet, and greater than 40 feet bgs are shown in plan view on Figures 3-1, 3-2, and 3-3. Each of these figures includes a three dimensional oblique angle view of the interpolated perchlorate distribution in lower left-hand corner of the figure. In addition, cross-sections showing perchlorate concentrations in soil samples along three cross-section alignments (A-A', B-B', and C-C' section line alignments shown on Figure 3-1) through the area of investigation are shown on Figures 3-4 and Figure 3-5.

The evaluation of soil sampling results including the three-dimensional interpolation of the perchlorate concentrations using the EarthVision® software resulted in the following general modifications from the Addendum Report regarding the lateral and vertical extent of perchlorate to concentrations of 40 µg/kg:

- Detections of perchlorate in borings west and south of Building 2 have resulted in additional areas identified with low levels of perchlorate with the highest concentration of 120 µg/kg in the boring west of Building 2 (PSZB-92) and the highest concentration of 300 µg/kg in the boring south of Building 2 (PSZB-93).

- Detections of perchlorate in boring PSZB-90 from 1 to 40 feet bgs suggest that previously isolated detections of perchlorate in boring PSZB-52 are likely connected to the area of perchlorate impacted soils near PSZB-84.

- The lateral extent of perchlorate in deeper soils (deeper than 100 feet bgs) is greater than 50 lateral feet from PDZB-19. However, soil samples collected at depths 90 and 100 feet at PIZB-3 and PIZB-9, suggest that the deep occurrence of perchlorate in soil in this area does not extend laterally more than 100 feet from boring PDZB-19.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This Second Assessment Addendum report presents the findings of soil sampling conducted to address data gaps in the assessment of soils containing residual concentrations of perchlorate greater than 40 µg/kg (as requested in the LARWQCB letter dated January 3, 2007). Conclusions and recommendations regarding the further assessment of soils are as follows:

- Sampling of shallow soils beneath Building 4 confirmed the presence of perchlorate at concentrations generally consistent with shallow soil samples collected outside of Building 4.

- With one exception, the lateral extent of perchlorate in the area of investigation has been characterized to concentrations of 40 µg/kg. The exception is the area south and southwest of Building 2. No additional characterization is recommended in these areas based on the relatively low concentrations of perchlorate.

- The vertical extent of perchlorate has not been fully characterized to concentrations of 40 µg/kg in the area north of Building 3. Consequently, additional vertical characterization may be warranted in this area. The need and timing of this additional characterization should be assessed after the implementation of planned remedial actions on the Mortech property (Building 4 at 411 N. Aerojet Avenue).

- The vertical extent of perchlorate above concentrations of 40 µg/kg south of Building 4 appears to extend beyond a depth of 250 feet bgs and may reach groundwater in this area. The lateral extent of perchlorate concentrations greater than 40 µg/kg at depths ranging from 50 to 100 feet bgs appears to be less than 100 feet based on the interpretation of results from adjacent borings. Given these findings and previous sampling results from PIZB-3 that showed concentrations of perchlorate of less than the

reporting limit of 40 µg/kg at depths of 90 and 100 feet bgs, the lateral extent of perchlorate in deeper soils is considered adequately characterized.

5.0 REFERENCES

Geomatrix, 2002a, Report - Remedial Action Plan for Soils Containing Residual Perchlorate, Azusa/Irwindale Study Area, Azusa, California, June.

Geomatrix, 2002b, Report - Addendum, Remedial Action Plan for Soils Containing Residual Perchlorate, Azusa/Irwindale Study Area, Azusa, California, December 30.

Geomatrix, 2003, Letter - 2nd Addendum, Remedial Action Plan for Soils Containing Residual Perchlorate, Azusa/Irwindale Study Area, Azusa, California, October.

Geomatrix, 2004, Letter - Inspection of Subsurface Piping, Waste Treatment Facility, WT-2 (AOC NG-1), Azusa/Irwindale Study Area, Azusa, California, June 22.

Geomatrix, 2005a, Work Plan for Further Assessment of Perchlorate in Soil in Areas of Concern, Azusa/Irwindale Study Area, Azusa, California, January.

Geomatrix, 2005b, Work Plan Addendum for Further Assessment of Perchlorate in Soil in Areas of Concern, Azusa/Irwindale Study Area, Azusa, California, June.

Geomatrix, 2005c, Comprehensive Groundwater Modeling Report, Baldwin Park Operable Unit of San Gabriel Valley Superfund Sites, July 29.

Geomatrix, 2005d, Construction Completion Report, WT-2 Area Remedial Action, Azusa/Irwindale Study Area, Azusa and Irwindale, California, June 30.

Geomatrix, 2006a, Further Assessment of Soils Containing Residual Perchlorate, Azusa/Irwindale Study Area, Azusa and Irwindale, California, April 18.

Geomatrix, 2007a, Third Work Plan Addendum, Further Assessment of Soils in Areas of Concern, Azusa/Irwindale Study Area, Azusa and Irwindale, California, August 17.

Geomatrix, 2007b, Addendum – Further Assessment of Soils Containing Residual Perchlorate, Azusa/Irwindale Study Area, Azusa and Irwindale, California, May 31.

Harding Lawson Associates (HLA), 1991, Revised Work Plan, AISA Site Assessment.

HLA, 1994, Report – Comprehensive Site Assessment Report, Azusa/Irwindale Study Area, San Gabriel Valley, Los Angeles, California, September.

HLA, 2000, Report - Phase I Assessment of Emerging Chemicals in the Vadose Zone, Aerojet Azusa Facility, San Gabriel Basin, California, October.

HLA, 2001, Report - Phase II Assessment of Emerging Chemicals in the Vadose Zone, Aerojet Azusa Facility, San Gabriel Basin, California, April.

TABLES

TABLE 3-1

SUMMARY OF ANALYTICAL RESULTS FOR PERCHLORATE IN SOIL SAMPLES OCTOBER AND NOVEMBER 2007

AZUSA/IRWINDALE STUDY AREA

Azusa and Irwindale, California

Results reported in micrograms per kilogram (µg/kg)

Boring ID	Sample Date	Sample Depth (feet bgs[1])	Perchlorate EPA 6850
PIZB-8	10/25/07	45	98
PIZB-8	10/25/07	50	100
PIZB-8	10/25/07	60	420
PIZB-8	10/25/07	70	1,400
PIZB-8	10/25/07	80	860
PIZB-8	10/25/07	90	160
PIZB-8	10/25/07	100	77
PIZB-9	10/18/07	1	120
PIZB-9	10/18/07	2.5	58
PIZB-9	10/18/07	5	67
PIZB-9	11/5/07	7.5	ND (<6)[2]
PIZB-9	11/5/07	10	16
PIZB-9	11/5/07	15	ND(<6)
PIZB-9	11/5/07	20	10
PIZB-9	11/5/07	25	ND(<6)
PIZB-9	11/5/07	30	9.1
PIZB-9	11/5/07	35	15
PIZB-9	11/5/07	40	21
PIZB-9	11/5/07	45	54
PIZB-9	11/5/07	50	16
PIZB-9	11/5/07	60	36
PIZB-9	11/5/07	70	31
PIZB-9	11/6/07	80	13
PIZB-9	11/6/07	90	7.1
PIZB-9	11/6/07	100	9.9
PDZB-20	11/1/07	110	670
PDZB-20	11/1/07	120	310
PDZB-20	11/1/07	130	640
PDZB-20	11/1/07	140	69
PDZB-20	11/2/07	150	160
PDZB-20	11/2/07	160	170
PDZB-20	11/2/07	170	96
PDZB-20	11/2/07	180	160
PDZB-20	11/2/07	190	110
PDZB-20	11/2/07	200	92
PDZB-21	10/26/07	35	79
PDZB-21	10/26/07	40	230
PDZB-21	10/26/07	45	89
PDZB-21	10/26/07	50	350
PDZB-21	10/26/07	60	190
PDZB-21	10/26/07	70	690
PDZB-21	10/26/07	80	360
PDZB-21	10/26/07	90	600
PDZB-21	10/26/07	100	650
PDZB-21	10/26/07	110	270

TABLE 3-1

SUMMARY OF ANALYTICAL RESULTS FOR PERCHLORATE IN SOIL SAMPLES OCTOBER AND NOVEMBER 2007

Results reported in micrograms per kilogram (µg/kg)

Boring ID	Sample Date	Sample Depth (feet bgs[1])	Perchlorate EPA 6850
PDZB-21	10/29/07	120	610
PDZB-21	10/29/07	130	440
PDZB-21	10/29/07	140	320
PDZB-21	10/29/07	150	340
PDZB-21	10/29/07	160	370
PDZB-21	10/29/07	170	280
PDZB-21	10/29/07	180	380
PDZB-21	10/30/07	190	410
PDZB-21	10/30/07	200	480
PDZB-21	10/30/07	210	700
PDZB-21	10/30/07	220	550
PDZB-21	10/30/07	230	620
PSZB-88	10/25/07	1	ND (<6)
PSZB-88	10/25/07	2.5	ND (<6)
PSZB-88	10/25/07	5	65
PSZB-88	10/29/07	7.5	36
PSZB-88	10/29/07	10	ND (<6)
PSZB-88	10/29/07	15	ND (<6)
PSZB-88	10/29/07	20	ND (<6)
PSZB-88A	10/31/07	25	ND (<6)
PSZB-88A	10/31/07	30	ND (<6)
PSZB-88A	10/31/07	35	ND (<6)
PSZB-88A	10/31/07	40	ND (<6)
PSZB-89	10/26/07	1	9.4
PSZB-89	10/26/07	2.5	ND (<6)
PSZB-89	10/26/07	5	ND (<6)
PSZB-89	10/30/07	7.5	ND (<6)
PSZB-89	10/30/07	10	ND (<6)
PSZB-89	10/30/07	15	ND (<6)
PSZB-89	10/30/07	20	ND (<6)
PSZB-89	10/30/07	25	ND (<6)
PSZB-89	10/30/07	30	12
PSZB-89	10/30/07	35	ND(<6)
PSZB-89	10/30/07	40	ND(<6)
PSZB-90	10/26/07	1	460
PSZB-90	10/26/07	2.5	140
PSZB-90	10/26/07	5	9,800
PSZB-90	10/31/07	7.5	1,100
PSZB-90	10/31/07	10	970
PSZB-90	11/3/07	15	180
PSZB-90	11/3/07	20	130
PSZB-90	11/3/07	25	510
PSZB-90	11/3/07	30	86
PSZB-90	11/3/07	35	650
PSZB-90	11/3/07	40	230
PSZB-91	10/25/07	1	ND (<6)
PSZB-91	10/25/07	2.5	ND (<6)
PSZB-91	10/25/07	5	ND (<6)
PSZB-91	11/3/07	7.5	ND (<6)

TABLE 3-1

SUMMARY OF ANALYTICAL RESULTS FOR PERCHLORATE IN SOIL SAMPLES OCTOBER AND NOVEMBER 2007

Results reported in micrograms per kilogram (µg/kg)

Boring ID	Sample Date	Sample Depth (feet bgs[1])	Perchlorate EPA 6850
PSZB-91	11/3/07	10	ND (<6)
PSZB-91	11/3/07	15	ND (<6)
PSZB-91	11/3/07	20	ND (<6)
PSZB-91	11/3/07	25	ND (<6)
PSZB-91	11/3/07	30	6.1
PSZB-91	11/3/07	35	ND (<6)
PSZB-91	11/3/07	40	ND (<6)
PSZB-92	10/25/07	1	ND (<6)
PSZB-92	10/25/07	2.5	ND (<6)
PSZB-92	10/25/07	5	ND (<6)
PSZB-92	11/3/07	7.5	ND (<6)
PSZB-92	11/3/07	10	ND (<6)
PSZB-92	11/3/07	15	ND (<6)
PSZB-92	11/3/07	20	50
PSZB-92	11/3/07	25	120
PSZB-92	11/3/07	30	44
PSZB-92	11/3/07	35	80
PSZB-92	11/3/07	40	21
PSZB-93	10/25/07	1	250
PSZB-93	10/25/07	2.5	300
PSZB-93	10/25/07	5	300
PSZB-93	11/5/07	7.5	130
PSZB-93	11/5/07	10	82
PSZB-93	11/5/07	15	59
PSZB-93	11/5/07	20	82
PSZB-93	11/5/07	25	82
PSZB-93	11/5/07	30	39
PSZB-93	11/5/07	35	99
PSZB-93	11/5/07	40	72
B4-1	11/10/07	1	290
B4-1	11/10/07	2.5	200
B4-1	11/10/07	5	ND (<6)
B4-1	11/10/07	7.5	49
B4-1	11/10/07	10	17
B4-2	11/10/07	1	140
B4-2	11/10/07	2	390
B4-3	11/10/07	1	11
B4-3	11/10/07	2.5	1,300
B4-3	11/10/07	5	3,000
B4-3	11/10/07	7.5	170
B4-3	11/10/07	10	62
B4-4	11/10/07	1	100
B4-4	11/10/07	2.5	1,400
B4-4	11/10/07	4.5	180

Notes:

1. Bgs = below ground surface.
2. ND (<6) = Not detected above laboratory reporting limit indicated in parenthesis.

TABLE 3-2

SUMMARY OF ANALYTICAL RESULTS FOR QA/QC SAMPLES
OCTOBER AND NOVEMBER 2007

AZUSA/IRWINDALE STUDY AREA

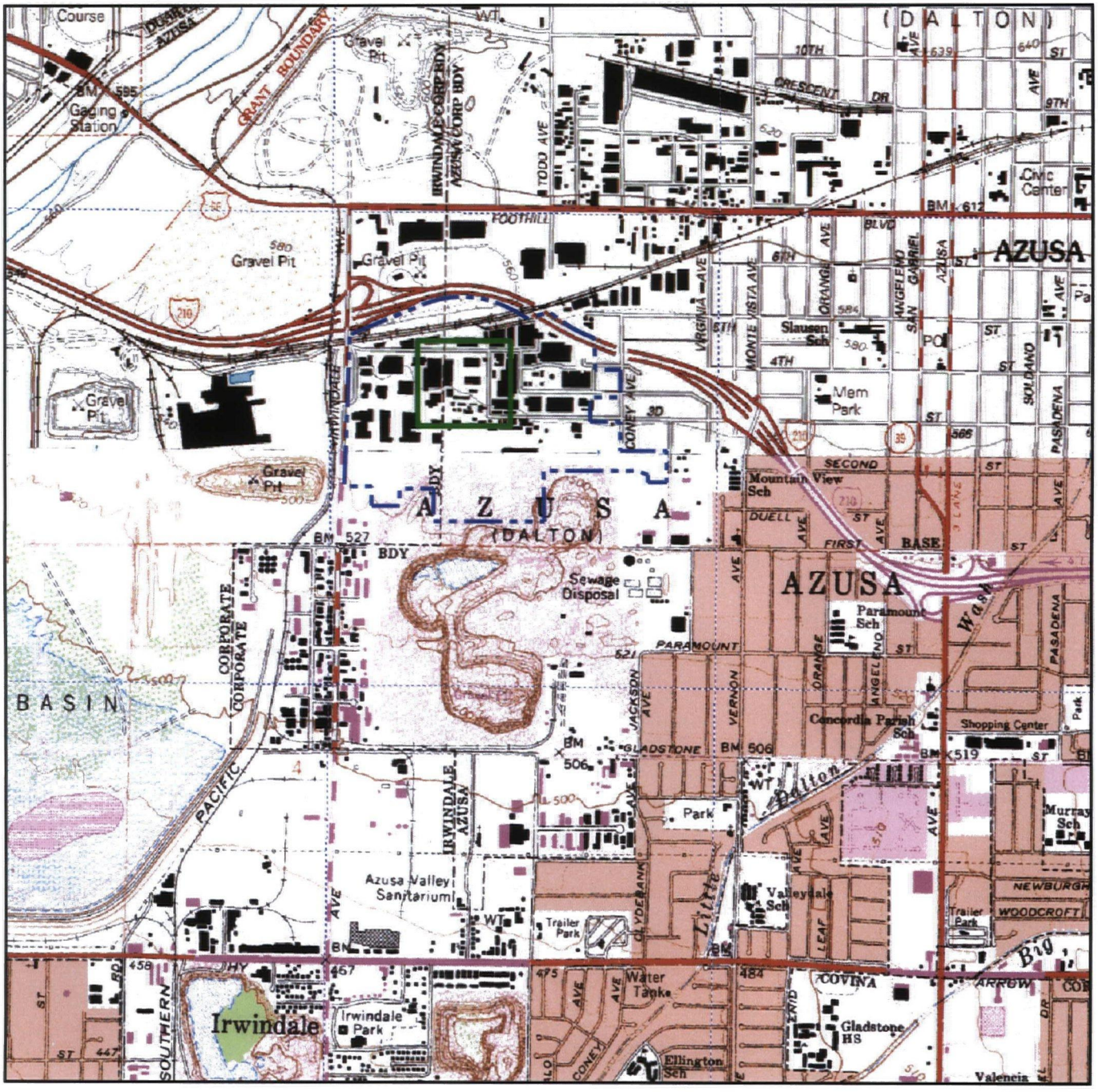
Azusa and Irwindale, California

Results reported in micrograms per liter (µg/l)

Sample ID	Sample Date	QA/QC Sample Type	EPA Method 314.0
			Perchlorate
20071024-EB	10/24/07	Equipment Rinse Blank - Drill Casing	ND (<3)
20071029-EB	10/29/07	Equipment Rinse Blank - Drill Casing	ND (<3)
20071110-EB	11/10/2007	Equipment Rinse Blank - Drill Casing	ND (<3)

1. ND (<3) = Not detected above laboratory reporting limit indicated in brackets.

FIGURES



Explanation

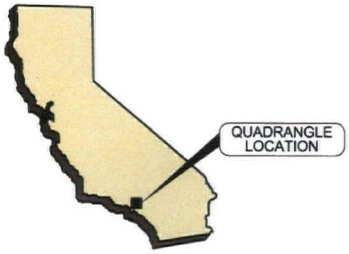
Expanded boundary of Azusa/Irwindale Study Area (AISA)

Detailed area shown in Figure 1-2

0 1000 2000

Approximate scale in feet

Base map modified from U.S.G.S. 7.5 minute quadrangle maps AZUSA, California 1995, and BALDWIN PARK, California 1966; Photo Revised 1981.



SITE LOCATION MAP

AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: jrw	Date: 11/30/07	Project No. 7190.006
Geomatrix		Figure 1-1

Plot Date: 11/30/07 - 2:
Plotted by: jworker
Drawing Path: W:\proje
90.000 (Aerojet BPOU)\007190_TASK 1- AISA\007190.006.0\ACAD-Graphics\, Drawing Name: Site_Vicinity_v2.dwg

IRWINDALE

AZUSA

Optical Drive

Bldg. 6

Bldg. 1 C

Bldg. 1 B

Bldg. 2

8615-021-018
PROFICIENCY SGV, LLC

8615-001-060
DRAGONIS INVESTMENTS
Bldg. 3

TRUCK WELL

Truck Well

8615-001-059
JOSEPH FAMILY
TRUST
Bldg. 4

8615-001-031
PROFICIENCY
SGV, LLC

Loading Dock

8615-001-401 Parking Area
NORTHROP GRUMMAN SYSTEMS CORP.

Parking

Aerojet Avenue (former Central Ave.)

3rd Street

Santos Diaz Ave.

Tanks

Explanation

8615-001-031 Parcel number and
PROFICIENCY property owner
SGV, LLC

Current building

Chain link fence

Parcel boundary

Irwindale-Azusa boundary

Note:

1. Parcel number and property owner from Los Angeles County Office of the Assessor.

0 50 100
Approximate scale in feet

Basemap modified from a Harding-ESE figure, revised 4/01, and a map provided by PerkinElmer, Optoelectronics, Inc., dated July, 2003. 2005, 2006 2007 boring locations based on Cal Vada surveys of April 2005, February-March 2006, April 2007, and November 2007.

SITE MAP SHOWING PROPERTY OWNERS

ASUZA / IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: jrw	Date: 11/30/07	Project No. 7190.006
Geomatrix		Figure 1-2

Plot Date: 11/30/07 Plotted by: jworker
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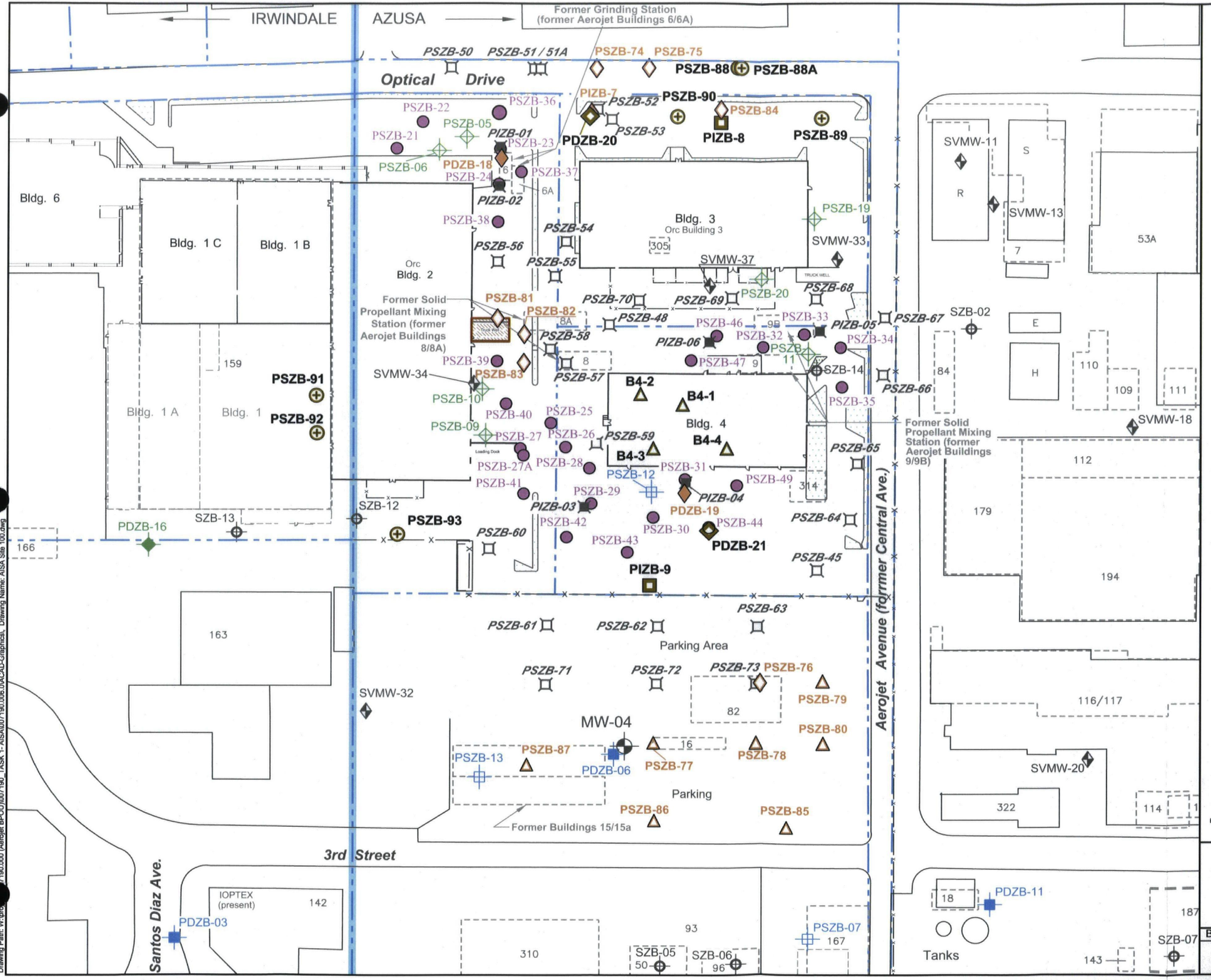

Explanation

- B4-4 — Near surface (2'-10') boring (Geomatrix, October/November 2007)
- PSZB-93 — Shallow zone boring (Geomatrix, October/November 2007)
- PIZB-9 — Intermediate zone boring (Geomatrix, October/November 2007)
- PDZB-21 — Deep zone boring (Geomatrix, October/November 2007)
- PSZB-87 — Near surface (5'-10') boring (Geomatrix, March/April 2007)
- PSZB-84 — Shallow zone (30'-40') boring (Geomatrix, March/April 2007)
- PIZB-7 — Intermediate zone (100') boring (Geomatrix, April 2007)
- PDZB-19 — Deep zone (250') boring (Geomatrix, March 2007)
- PSZB-73 — Shallow zone boring (Geomatrix, February/March 2006)
- PIZB-06 — Intermediate zone boring (Geomatrix, February/March 2006)
- PSZB-49 — Shallow zone boring (March/April 2005)
- PSZB-20 — Shallow zone boring (Phase II - Harding ESE, April 2001)
- PDZB-16 — Deep zone boring (Phase II - Harding ESE, April 2001)
- PSZB-12 — Shallow zone boring (Phase I - HLA, October 2000)
- PDZB-06 — Deep zone boring (Phase I - HLA, October 2000)
- SZB-20 — Shallow zone boring (HLA, 1994)
- SVMW-37 — Shallow vapor monitoring well (HLA, 1994)
- MW-04 — Monitoring well
- Current building
- 9 — Former building
- Chain link fence
- Parcel boundary
- Irwindale-Azusa boundary
- Building 2 truck well excavation

0 50 100
Approximate scale in feet

Basemap modified from a Harding-ESE figure, revised 4/01, and a map provided by PerkinElmer, Optoelectronics, Inc., dated July, 2003. 2005, 2006 2007 boring locations based on Cal Vada surveys of April 2005, February-March 2006, April 2007, and November 2007.

SITE MAP SHOWING BORINGS AND WELLS

ASUZA / IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: jrw	Date: 11/28/07	Project No. 7190.006
Geomatrix		Figure 1-3

Plot Date: 11/30/07 Plotted by: jworker
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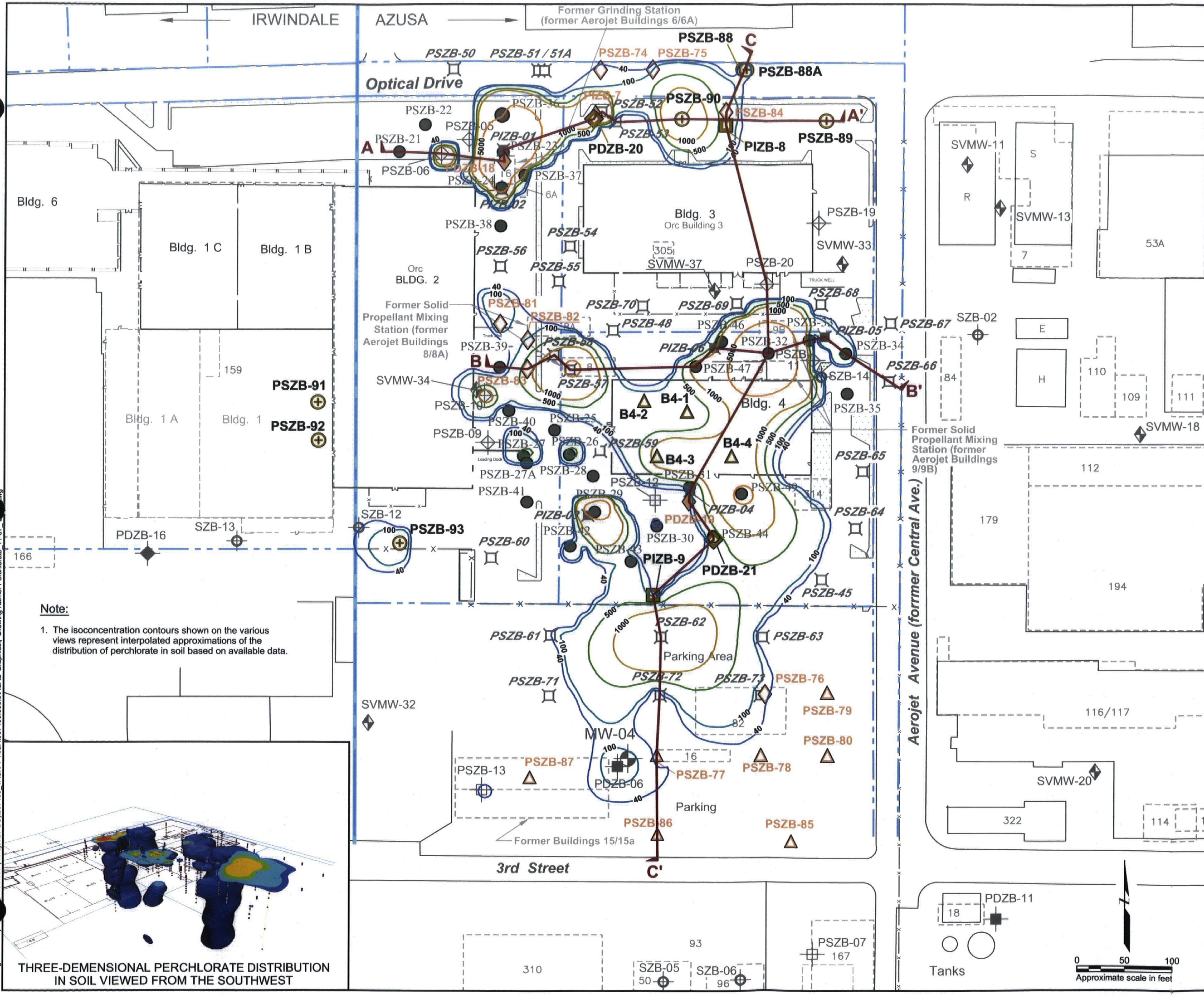


Note:

1. The isoconcentration contours shown on the various views represent interpolated approximations of the distribution of perchlorate in soil based on available data.

THREE-DEMENSIONAL PERCHLORATE DISTRIBUTION
IN SOIL VIEWED FROM THE SOUTHWEST

Plot Date: 11/30/07 ... Plotted by: jworker
Drawing Path: W:\pro...07190.000 (Aerojet BPOU)\007190_TASK 1- AISA\007190.006.0\ACAD-Graphics\, Drawing Name: Perchlorate_11-07_...dwg

Explanation

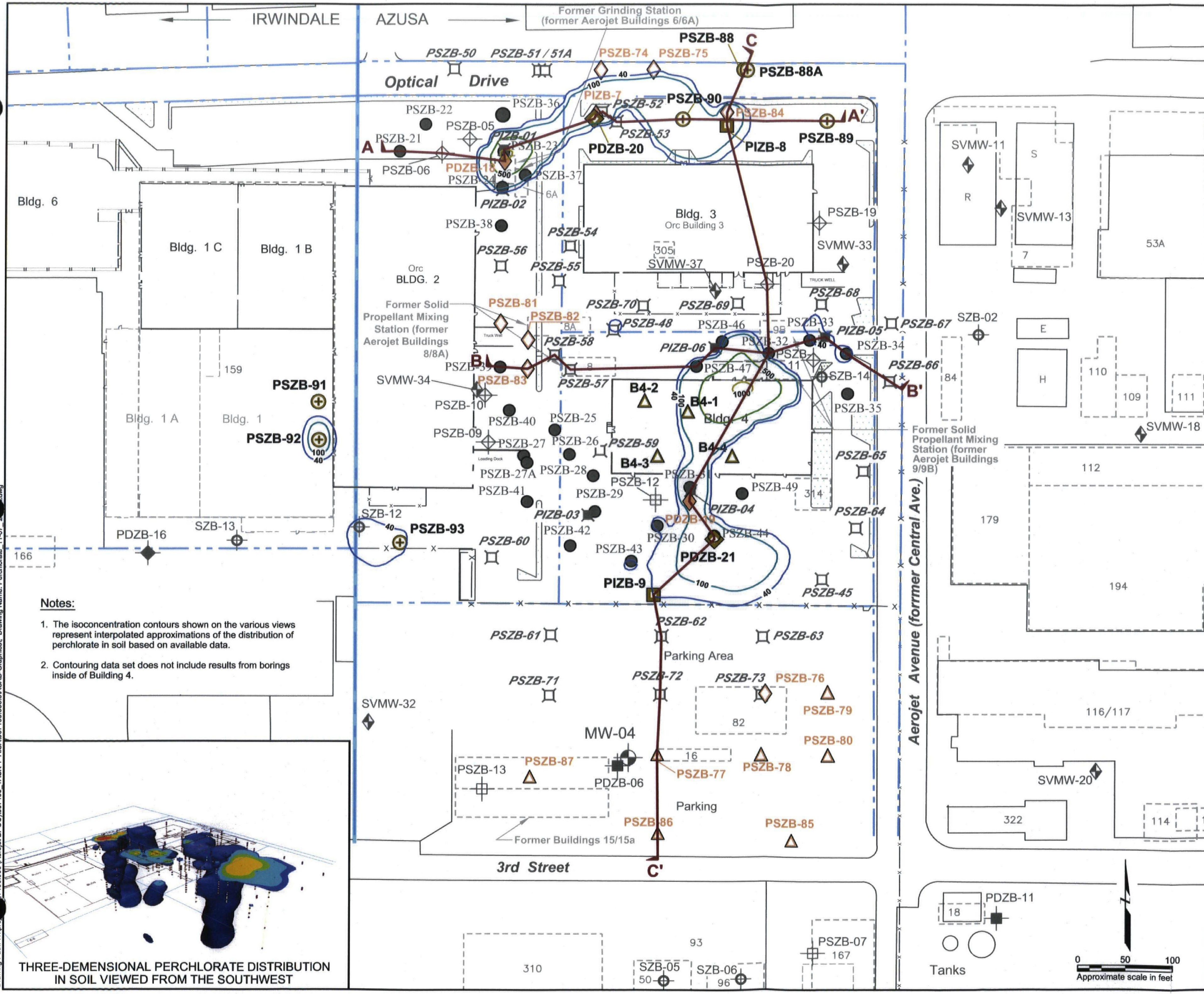
B4-4 △	Near surface (2'-10') boring (Geomatrix, October/November 2007)
PSZB-93 ⊕	Shallow zone boring (Geomatrix, October/November 2007)
PIZB-9 ▣	Intermediate zone boring (Geomatrix, October/November 2007)
PDZB-21 ◈	Deep zone boring (Geomatrix, October/November 2007)
PSZB-87 △	Near surface (5'-10') boring (Geomatrix, March/April 2007)
PSZB-84 ◇	Shallow zone (30'-40') boring (Geomatrix, March/April 2007)
PIZB-7	Intermediate zone (100') boring (Geomatrix, April 2007)
PDZB-19	Deep zone (250') boring (Geomatrix, March 2007)
PSZB-73	Shallow zone boring (Geomatrix, February/March 2006)
PIZB-06	Intermediate zone boring (Geomatrix, February/March 2006)
PSZB-49 ●	Shallow zone boring (March/April 2005)
PSZB-20	Shallow zone boring (Phase II - Harding ESE, April 2001)
PDZB-16	Deep zone boring (Phase II - Harding ESE, April 2001)
PSZB-12	Shallow zone boring (Phase I - HLA, October 2000)
PDZB-06	Deep zone boring (Phase I - HLA, October 2000)
SZB-20	Shallow zone boring (HLA, 1994)
SVMW-37	Shallow vapor monitoring well (HLA, 1994)
MW-04	Monitoring well
	Current building
9	Former building
	Chain link fence
	Parcel boundary
	Irwindale-Azusa boundary
A A'	Line of cross section
40	Perchlorate isoconcentration contour (40 micrograms per kilogram [µg/kg])
100	Perchlorate isoconcentration contour (100 µg/kg)
500	Perchlorate isoconcentration contour (500 µg/kg)
1000	Perchlorate isoconcentration contour (1000 µg/kg)
5000	Perchlorate isoconcentration contour (5000 µg/kg)

Basemap modified from a Harding-ESE figure, revised 4/01, and a map provided by PerkinElmer, Optoelectronics, Inc., dated July, 2003. 2005, 2006 2007 boring locations based on Cal Vada surveys of April 2005, February-March 2006, April 2007, and November 2007.

DISTRIBUTION OF PERCHLORATE
0 TO 20 FEET BGS

ASUZA / IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: jrw	Date: 11/30/07	Project No. 7190.006
Geomatrix		Figure 3-1



Notes:

1. The isoconcentration contours shown on the various views represent interpolated approximations of the distribution of perchlorate in soil based on available data.
2. Contouring data set does not include results from borings inside of Building 4.

THREE-DEMENSIONAL PERCHLORATE DISTRIBUTION IN SOIL VIEWED FROM THE SOUTHWEST

Plot Date: 11/30/07, Plotted by: jworker
Drawing Path: W:\projects\7190.000 (Aerojet BPOU)\007190_TASK 1- AISA\007190.006.0\ACAD-Graphics\, Drawing Name: Perchlorate_11-07_...dwg

Explanation

B4-4	Near surface (2'-10') boring (Geomatrix, October/November 2007)
PSZB-93	Shallow zone boring (Geomatrix, October/November 2007)
PIZB-9	Intermediate zone boring (Geomatrix, October/November 2007)
PDZB-21	Deep zone boring (Geomatrix, October/November 2007)
PSZB-87	Near surface (5'-10') boring (Geomatrix, March/April 2007)
PSZB-84	Shallow zone (30'-40') boring (Geomatrix, March/April 2007)
PIZB-7	Intermediate zone (100') boring (Geomatrix, April 2007)
PDZB-19	Deep zone (250') boring (Geomatrix, March 2007)
PSZB-73	Shallow zone boring (Geomatrix, February/March 2006)
PIZB-06	Intermediate zone boring (Geomatrix, February/March 2006)
PSZB-49	Shallow zone boring (March/April 2005)
PSZB-20	Shallow zone boring (Phase II - Harding ESE, April 2001)
PDZB-16	Deep zone boring (Phase II - Harding ESE, April 2001)
PSZB-12	Shallow zone boring (Phase I - HLA, October 2000)
PDZB-06	Deep zone boring (Phase I - HLA, October 2000)
SZB-20	Shallow zone boring (HLA, 1994)
SVMW-37	Shallow vapor monitoring well (HLA, 1994)
MW-04	Monitoring well
	Current building
9	Former building
	Chain link fence
	Parcel boundary
	Irwindale-Azusa boundary
A A'	Line of cross section
40	Perchlorate isoconcentration contour (40 micrograms per kilogram [µg/kg])
100	Perchlorate isoconcentration contour (100 µg/kg)
500	Perchlorate isoconcentration contour (500 µg/kg)
1000	Perchlorate isoconcentration contour (1000 µg/kg)

Basemap modified from a Harding-ESE figure, revised 4/01, and a map provided by PerkinElmer, Optoelectronics, Inc., dated July, 2003. 2005, 2006 2007 boring locations based on Cal Vada surveys of April 2005, February-March 2006, April 2007, and November 2007.

0 50 100
Approximate scale in feet

DISTRIBUTION OF PERCHLORATE BETWEEN 20 AND 40 FEET BGS

ASUZA / IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: jrw	Date: 11/30/07	Project No. 7190.006
Geomatrix		Figure 3-2

IRWINDALE

AZUSA

Former Grinding Station (former Aerojet Buildings 6/6A)

Optical Drive

Bldg. 6

Bldg. 1 C

Bldg. 1 B

Bldg. 1 A

Bldg. 1

Bldg. 3
Orc Building 3

Orc
BLDG. 2

Bldg. 4

Former Solid Propellant Mixing Station (former Aerojet Buildings 8/8A)

Former Solid Propellant Mixing Station (former Aerojet Buildings 9/9B)

Parking Area

Parking

Former Buildings 15/15a

3rd Street

Aerojet Avenue (formmer Central Ave.)

PSZB-88 PSZB-88A PSZB-89 PSZB-90 PSZB-91 PSZB-92 PSZB-93

PSZB-50 PSZB-51 / 51A PSZB-74 PSZB-75 PSZB-84 PSZB-87

PIZB-7 PIZB-8 PIZB-9 PDZB-20 PDZB-21

PSZB-01 PSZB-02 PSZB-03 PSZB-04 PSZB-05 PSZB-06 PSZB-07 PSZB-08 PSZB-09 PSZB-10 PSZB-11 PSZB-12 PSZB-13 PSZB-14 PSZB-15 PSZB-16 PSZB-17 PSZB-18 PSZB-19 PSZB-20 PSZB-21 PSZB-22 PSZB-23 PSZB-24 PSZB-25 PSZB-26 PSZB-27 PSZB-27A PSZB-28 PSZB-29 PSZB-30 PSZB-31 PSZB-32 PSZB-33 PSZB-34 PSZB-35 PSZB-36 PSZB-37 PSZB-38 PSZB-39 PSZB-40 PSZB-41 PSZB-42 PSZB-43 PSZB-44 PSZB-45 PSZB-46 PSZB-47 PSZB-48 PSZB-49

PSZB-52 PSZB-53 PSZB-54 PSZB-55 PSZB-56 PSZB-57 PSZB-58 PSZB-59 PSZB-60 PSZB-61 PSZB-62 PSZB-63 PSZB-64 PSZB-65 PSZB-66 PSZB-67 PSZB-68 PSZB-69 PSZB-70 PSZB-71 PSZB-72 PSZB-73 PSZB-76 PSZB-77 PSZB-78 PSZB-79 PSZB-80 PSZB-81 PSZB-82 PSZB-83 PSZB-85 PSZB-86

B4-1 B4-2 B4-3 B4-4

PDZB-16 PDZB-18 PDZB-19 PDZB-11

SVMW-11 SVMW-13 SVMW-18 SVMW-20 SVMW-32 SVMW-33 SVMW-34 SVMW-37

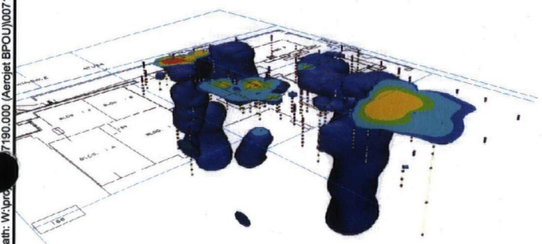
MW-04

SZB-02 SZB-05 SZB-06 SZB-12 SZB-13 SZB-14

A A' B B' C C'

Notes:

1. The isoconcentration contours shown on the various views represent interpolated approximations of the distribution of perchlorate in soil based on available data.
2. Contouring data set does not include results from borings inside of Building 4.



THREE-DEMENSIONAL PERCHLORATE DISTRIBUTION IN SOIL VIEWED FROM THE SOUTHWEST

Explanation

- B4-4 — Near surface (2'-10') boring (Geomatrix, October/November 2007)
- PSZB-93 — Shallow zone boring (Geomatrix, October/November 2007)
- PIZB-9 — Intermediate zone boring (Geomatrix, October/November 2007)
- PDZB-21 — Deep zone boring (Geomatrix, October/November 2007)
- PSZB-87 — Near surface (5'-10') boring (Geomatrix, March/April 2007)
- PSZB-84 — Shallow zone (30'-40') boring (Geomatrix, March/April 2007)
- PIZB-7 — Intermediate zone (100') boring (Geomatrix, April 2007)
- PDZB-19 — Deep zone (250') boring (Geomatrix, March 2007)
- PSZB-73 — Shallow zone boring (Geomatrix, February/March 2006)
- PIZB-06 — Intermediate zone boring (Geomatrix, February/March 2006)
- PSZB-49 — Shallow zone boring (March/April 2005)
- PSZB-20 — Shallow zone boring (Phase II - Harding ESE, April 2001)
- PDZB-16 — Deep zone boring (Phase II - Harding ESE, April 2001)
- PSZB-12 — Shallow zone boring (Phase I - HLA, October 2000)
- PDZB-06 — Deep zone boring (Phase I - HLA, October 2000)
- SZB-20 — Shallow zone boring (HLA, 1994)
- SVMW-37 — Shallow vapor monitoring well (HLA, 1994)
- MW-04 — Monitoring well
- Current building
- 9 — Former building
- Chain link fence
- Parcel boundary
- Irwindale-Azusa boundary
- A — A' Line of cross section
- 40 — Perchlorate isoconcentration contour (40 micrograms per kilogram [µg/kg])
- 100 — Perchlorate isoconcentration contour (100 µg/kg)
- 500 — Perchlorate isoconcentration contour (500 µg/kg)
- 1000 — Perchlorate isoconcentration contour (1000 µg/kg)

Basemap modified from a Harding-ESE figure, revised 4/01, and a map provided by PerkinElmer, Optoelectronics, Inc., dated July, 2003. 2005, 2006 2007 boring locations based on Cal Vada surveys of April 2005, February-March 2006, April 2007, and November 2007.

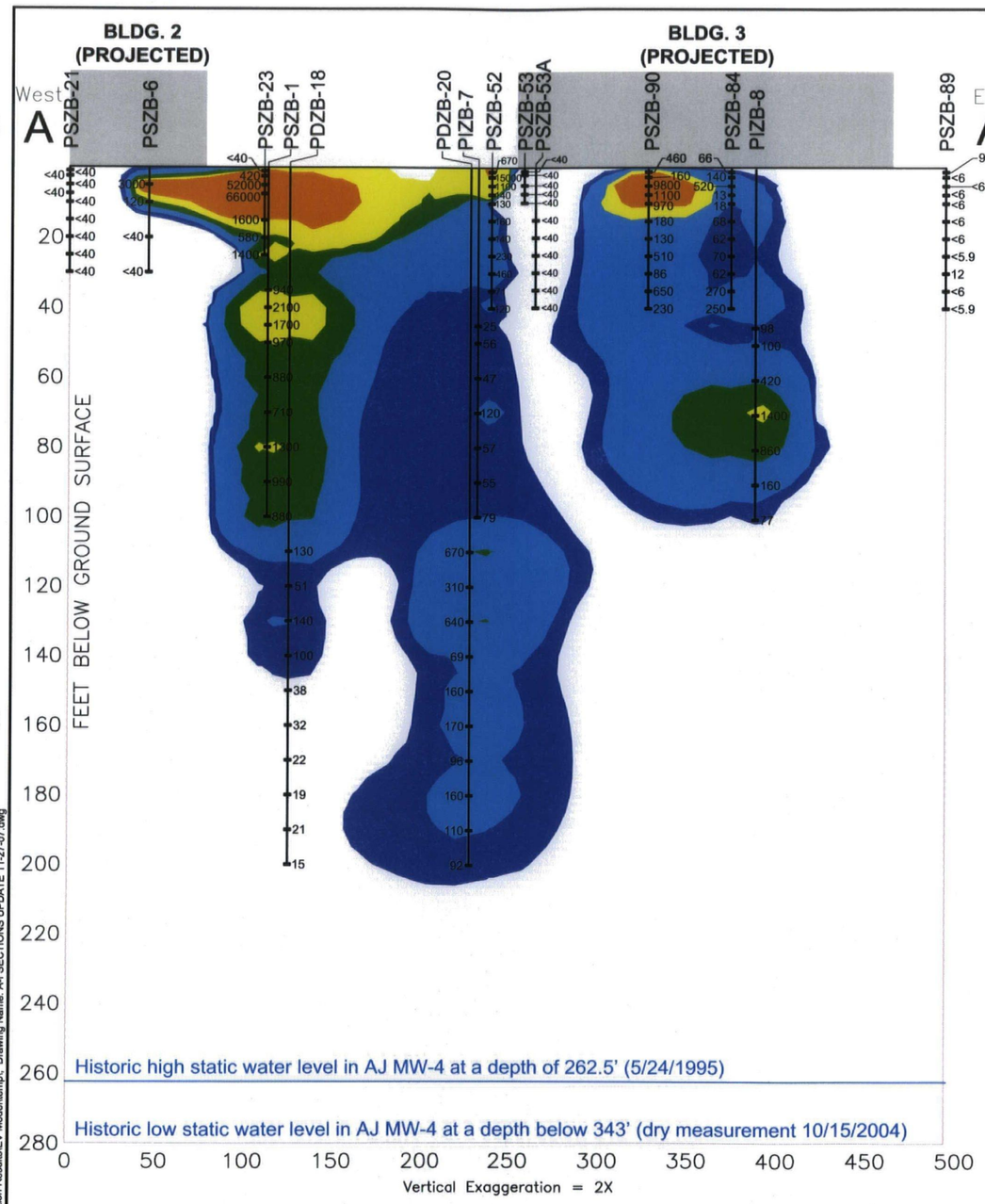
Approximate scale in feet: 0 50 100

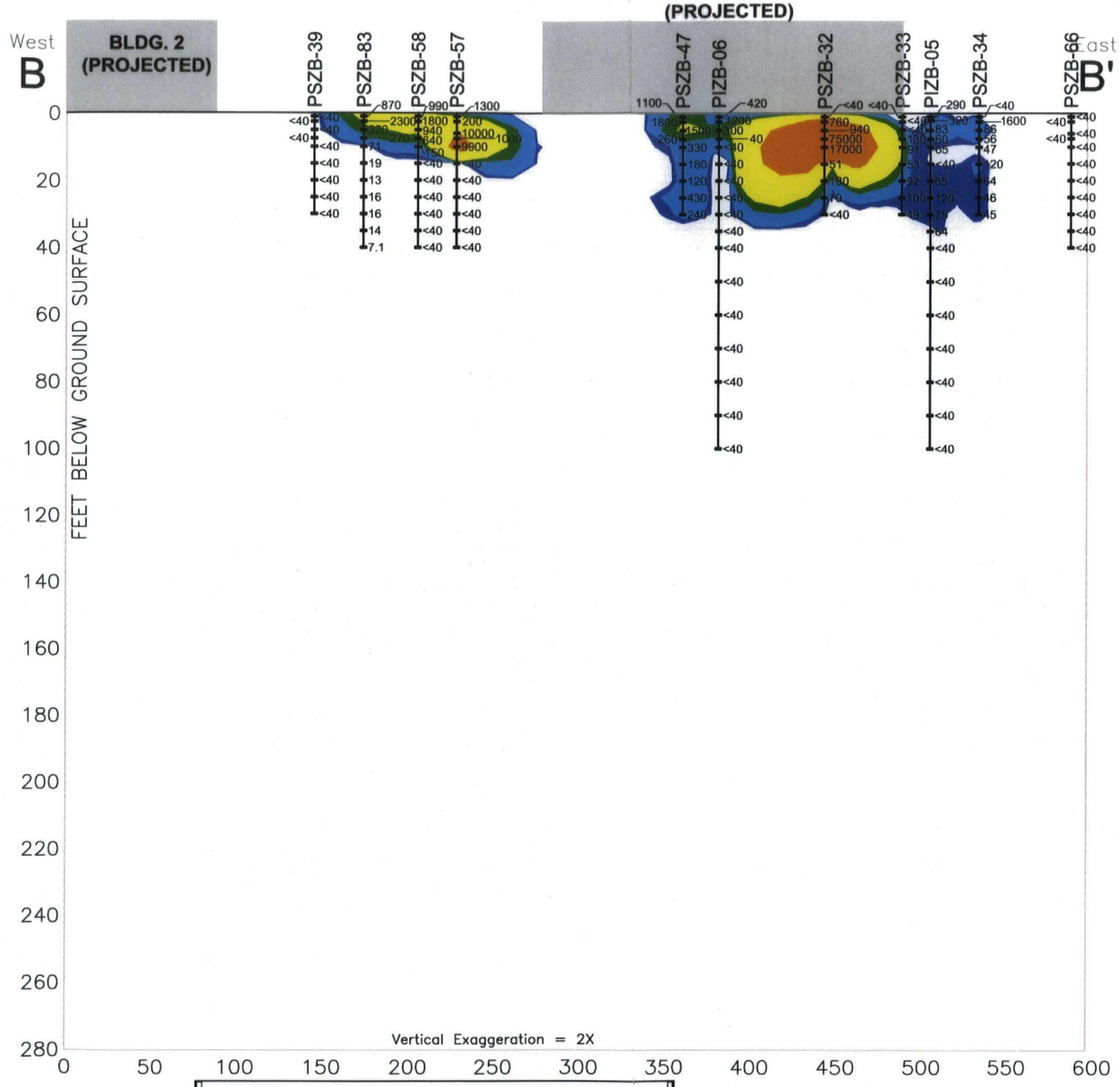
DISTRIBUTION OF PERCHLORATE BELOW 40 FEET BGS

ASUZA / IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: jrw	Date: 11/30/07	Project No. 7190.006
Geomatrix		Figure 3-3

Plot Date: 11/30/07
Drawing Path: W:\proj\...\7190.000 (Aerojet BPOU)\007190_TASK 1 - AI\SA\007190.006.0\ACAD-Graphics\, Drawing Name: Perchlorate_11-07_...dft.dwg
Xrefs: , Plotted by: jworker





Notes:

1. The isoconcentration contours shown on the various views represent interpolated approximations of the distribution of perchlorate in soil based on available data.

<6 Perchlorate not detected at a concentration greater than the laboratory reporting limit (6 ug/kg) using EPA method 6850.

<40 Perchlorate not detected at a concentration greater than the laboratory limit (40 ug/kg) using EPA method 314.

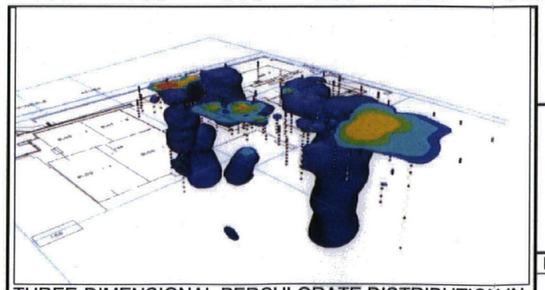
0 40 80
Approximate scale in feet

PSZB-11 - BORING ID

Explanation

Concentration of Perchlorate (ug/kg)

>5000
>1000
>500
>100
>40
<40



THREE-DIMENSIONAL PERCHLORATE DISTRIBUTION IN SOIL VIEWED FROM THE SOUTHWEST

CROSS SECTION A-A' and CROSS SECTION B-B'

ASUZA / IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: llu	Date: 11-29-07	Project No. 7190.006
Geomatrix		Figure 3-4

Plot Date: 11/30/07 - 11:2... Plotted by: lumy
Drawing Path: I:\Project\7190\GIS\AOC Characterization Results\EV Model\temp\ Drawing Name: A-I SECTIONS UPDATE 11-27-07.dwg

South C

PSZB-86 | PSZB-77 | PSZB-72 | PSZB-62 | PIZB-9 | PDZB-21 PSZB-44 | PSZB-19 | PIZB-4 PIZB-4A | BLDG. 4 (PROJECTED) | PSZB-32 | PSZB-20 | BLDG. 3 (PROJECTED) | PIZB-8 | PSZB-84 | PSZB-88 PSZB-88A

C' North

FEET BELOW GROUND SURFACE

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900

Vertical Exaggeration = 2X

0 40 80

Approximate scale in feet

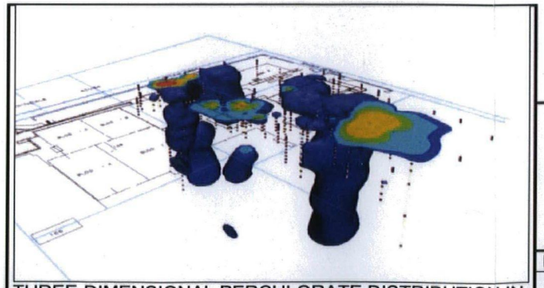
PSZB-11 - BORING ID

180
<40
<40

Explanation

Concentration of Perchlorate (ug/kg)

- >5000
- >1000
- >500
- >100
- >40
- <40



THREE-DIMENSIONAL PERCHLORATE DISTRIBUTION IN SOIL VIEWED FROM THE SOUTHWEST

Notes:

1. The isoconcentration contours shown on the various views represent interpolated approximations of the distribution of perchlorate in soil based on available data.
2. Contouring data set does not include results from borings inside Building 4.

<6 Perchlorate not detected at a concentration greater than the laboratory reporting limit (6 ug/kg) using EPA method 6850.

<40 Perchlorate not detected at a concentration greater than the laboratory limit (40 ug/kg) using EPA method 314.

CROSS SECTION C-C'

ASUZA / IRWINDALE STUDY AREA
Azusa and Irwindale, California

By: llu	Date: 11/29/07	Project No. 7190.006
Geomatrix		Figure 3-5

Plot Date: 11/30/07 - 11:2... Plotted by: lumy
Drawing Path: I:\Project\7190\mxd\AOC Characterization Results\EV Model\temp\, Drawing Name: A-I SECTIONS UPDATE 11-27-07.dwg

PARTIALLY SCANNED
OVERSIZE ITEM(S)

See document # 2233514
for partially scanned image(s).

PLATE 1

For complete hardcopy version of the oversize document
contact the Region IX Superfund Records Center

APPENDIX A

BORINGS LOGS

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. B4-1**
BORING LOCATION: On Parcel 8615-001-059 Inside Building 4	ELEVATION AND DATUM: Not surveyed; datum is building floor
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/10/07 / DATE FINISHED: 11/10/07
DRILLING METHOD: Hollow-stem auger	TOTAL DEPTH (ft.): 10.5 / MEASURING POINT: Building floor
DRILLING EQUIPMENT: Rhino M5T Limited Access Rig	DEPTH TO WATER: FIRST NA / COMPL. NA / 24 HRS. NA
SAMPLING METHOD: SPT split spoon drive sampler [18" x 1 3/8"]	LOGGED BY: L. Budny
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees / REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION	PID READING (ppm)	REMARKS
				Surface Elevation: Not surveyed; datum is building floor		
				~6" concrete		Hand augered to 1.5 feet below ground surface (bgs) Plastic sheeting at 0.6' bgs
1	B4-1 -1			POORLY GRADED SAND (SP): yellowish brown (10YR 5/4), moist, 100% fine to medium sand		
				POORLY GRADED SAND with GRAVEL (SP): yellowish brown (10YR 5/4), moist, ~80% fine to medium sand, ~20% gravel		
2				brown (10YR 5/3)		
3	B4-1 -2.5					
4						
5	B4-1 -5					
6						
7						
8	B4-1 -7.5					
9						
10	B4-1 -10					Boring backfilled with high solids bentonite grout Surface patched with concrete
				Bottom of boring at 10.5 ft bgs		
11						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. B4-2**
BORING LOCATION: On Parcel 8615-001-059 Inside Building 4	ELEVATION AND DATUM: Not surveyed; datum is building floor
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/10/07 / DATE FINISHED: 11/10/07
DRILLING METHOD: Hollow-stem auger	TOTAL DEPTH (ft.): 2.5 / MEASURING POINT: Building floor
DRILLING EQUIPMENT: Rhino M5T Limited Access Rig	DEPTH TO WATER / FIRST: NA / COMPL.: NA / 24 HRS.: NA
SAMPLING METHOD: SPT split spoon drive sampler [18" x 1 3/8"]	LOGGED BY: L. Budny
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees / REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION	PID READING (ppm)	REMARKS
				Surface Elevation: Not surveyed; datum is building floor		
				~5.25" concrete		Hand augered to 1.2 feet below ground surface (bgs)
1	B4-2 -1			POORLY GRADED SAND (SP): yellowish brown (10YR 5/4), moist, ~95% fine to coarse sand, ~5% gravel		Plastic sheeting at 0.8' bgs
2	B4-2 -2			POORLY GRADED SAND with GRAVEL (SP): yellowish brown (10YR 5/4), moist, ~80% fine to medium sand, ~20% gravel		
3				Bottom of boring at 2.5 ft bgs		Refusal at 2.5' bgs Boring backfilled with high solids bentonite grout Surface patched with concrete
4						
5						
6						
7						
8						
9						
10						
11						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. B4-3**	
BORING LOCATION: On Parcel 8615-001-059 Inside Building 4	ELEVATION AND DATUM: Not surveyed; datum is building floor	
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/10/07	DATE FINISHED: 11/10/07
DRILLING METHOD: Hollow-stem auger	TOTAL DEPTH (ft.): 10.5	MEASURING POINT: Building floor
DRILLING EQUIPMENT: Rhino M5T Limited Access Rig	DEPTH TO WATER / FIRST: NA	COMPL.: NA / 24 HRS.: NA
SAMPLING METHOD: SPT split spoon drive sampler [18" x 1 3/8"]	LOGGED BY: L. Budny	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not surveyed; datum is building floor	PID READING (ppm)	REMARKS
0				~6" concrete		Hand augered to 1 foot below ground surface (bgs) Plastic sheeting at 0.6' bgs
1	B4-3 -1			POORLY GRADED SAND (SP): yellowish brown (10YR 5/4), moist, 100% fine to medium sand POORLY GRADED GRAVEL with SAND (GP): yellowish brown (10YR 5/4), moist, ~70% gravel, ~30% fine to medium sand		
2						
3	B4-3 -2.5					
4				POORLY GRADED SAND with GRAVEL (SP): dark yellowish brown (10YR 4/4), moist, ~80% fine to medium sand, ~20% gravel		
5	B4-3 -5					
6						
7						
8	B4-3 -7.5					
9						
10	B4-3 -10			Bottom of boring at 10.5 ft bgs		Boring backfilled with high solids bentonite grout Surface patched with concrete
11						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. B4-4**
BORING LOCATION: On Parcel 8615-001-059 Inside Building 4	ELEVATION AND DATUM: Not surveyed; datum is building floor
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/10/07 / DATE FINISHED: 11/10/07
DRILLING METHOD: Hollow-stem auger	TOTAL DEPTH (ft.): 5.0 / MEASURING POINT: Building floor
DRILLING EQUIPMENT: Rhino M5T Limited Access Rig	DEPTH TO WATER / FIRST: NA / COMPL.: NA / 24 HRS.: NA
SAMPLING METHOD: SPT split spoon drive sampler [18" x 1 3/8"]	LOGGED BY: L. Budny
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees / REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION	PID READING (ppm)	REMARKS
				Surface Elevation: Not surveyed; datum is building floor		
				~6" concrete		Plastic sheeting at 0.6' bgs
1	B4-4 -1			POORLY GRADED SAND (SP): yellowish brown (10YR 5/4), moist, 100% fine to medium sand POORLY GRADED SAND with GRAVEL (SP): yellowish brown (10YR 5/4), moist, ~80% fine to medium sand, ~20% gravel		
2						
3	B4-4 -2.5			dark yellowish brown (10YR 4/4)		
4						
5	B4-4 -4.5			Bottom of boring at 5 ft bgs		Refusal at 5' bgs Boring backfilled with high solids bentonite grout Surface patched with concrete
6						
7						
8						
9						
10						
11						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PSZB-88**	
BORING LOCATION: Optical Drive	ELEVATION AND DATUM: 572.67' MSL (NAVD 88)	
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/25/07	DATE FINISHED: 10/30/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 20.0	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER: FIRST: NA; COMPL.: NA; 24 HRS.: NA	
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: J. Engblom/L. Budny	
HAMMER WEIGHT: NA; DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 572.67' MSL (NAVD 88)		
				~4" asphalt		Air knifed to 5 feet below ground surface (bgs) by BC² Environmental on 10/25/07 1' and 2.5' samples collected from sidewalls of boring and 5' sample with a hand auger on 10/25/07, then backfilled with cuttings Began drilling on 10/29/07 Drilled to 20' bgs with 9" casing and hammer bit Lithology assessed from cuttings collected through the cyclone
1	PSZB-88-1			POORLY GRADED SAND with GRAVEL (SP): dark brown (10YR 4/4), moist, ~75% medium to coarse sand, ~25% gravel		
2						
3	PSZB-88-2.5					
4						
5	PSZB-88-5					
6						
7						
8	PSZB-88-7.5					
9				POORLY GRADED GRAVEL (GP): very pale brown (10YR 7/3), moist, ~90% gravel, ~10% fine to coarse sand		
10	PSZB-88-10					
11						
12						
13				POORLY GRADED GRAVEL with SAND (GP): very pale brown (10YR 7/3), moist, ~80% gravel, ~20% fine to coarse sand		
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-88 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15	PSZB-88-15	■		POORLY GRADED GRAVEL with SAND (GP): continued		
16						
17						
18						
19						
20	PSZB-88-20	■		Bottom of boring at 20 ft bgs		Refusal at 20' bgs Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PSZB-88A**
BORING LOCATION: Optical Drive	ELEVATION AND DATUM: 572.63' MSL (NAVD 88)
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/31/07 / DATE FINISHED: 10/31/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 40.5 / MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER / FIRST: NA / COMPL.: NA / 24 HRS.: NA
SAMPLING METHOD: Cuttings from cyclone	LOGGED BY: P. Jeffers
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees / REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION	PID READING (ppm)	REMARKS
				Surface Elevation: 572.63' MSL (NAVD 88)		
				~4" asphalt		Drilled to 40.5' below ground surface (bgs) with 9" casing and hammer bit
1				SEE BORING LOG PSZB-88 (located approximately 3.5 feet west) FOR LITHOLOGY TO 20 ft bgs		Began sample collection at 25' bgs
2						Lithology assessed from cuttings collected through the cyclone
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-88A (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15				SEE BORING LOG PSZB-88 (located approximately 3.5 feet west) FOR LITHOLOGY TO 20 ft bgs		
16						
17						
18						
19						
20				POORLY GRADED SAND with GRAVEL (SP): light gray (7.5YR 7/1), moist, ~80% medium to coarse sand, ~20% gravel		
21						
22						
23						
24						
25	PSZB-88A-25					
26						
27						
28				POORLY GRADED GRAVEL with SAND (GP): light gray (7.5YR 7/1), moist, ~75% gravel, ~25% medium to coarse sand		
29						
30	PSZB-88A-30					
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-88A (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED GRAVEL with SAND (GP): continued		
33				POORLY GRADED SAND with GRAVEL (SP): brown (7.5YR 4/2), moist, ~85% medium to coarse sand, ~15% gravel		
34						
35	PSZB-88A-35					
36						
37						
38						
39						
40	PSZB-88A-40					
41				Bottom of boring at 40.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
42						
43						
44						
45						
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PSZB-89**
BORING LOCATION: Parcel 8615-001-060	ELEVATION AND DATUM: 571.59' MSL (NAVD 88)
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/26/07 / DATE FINISHED: 11/1/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 40.5 / MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER: FIRST NA / COMPL. NA / 24 HRS. NA
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: J. Engblom/L. Budny
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees / REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 571.59' MSL (NAVD 88)		
				~2.5" asphalt		Air knifed to 5 feet below ground surface (bgs) by BC² Environmental on 10/26/07
1	PSZB-89-1			POORLY GRADED SAND with GRAVEL (SP): brown (10YR 4/3), moist, ~75% medium to coarse sand, ~25% gravel		
2						1' and 2.5' samples collected from sidewalls of boring and 5' sample with a hand auger on 10/26/07, then backfilled with cuttings
3	PSZB-89-2.5			POORLY GRADED GRAVEL with SAND (GP): brown (10YR 4/3), moist, ~65% gravel, ~35% medium to coarse sand		
4						Began drilling on 10/30/07 Drilled to 40.5' bgs with 9" casing and hammer bit
5	PSZB-89-5					
6						Lithology assessed from cuttings collected through the cyclone
7				POORLY GRADED SAND with GRAVEL (SP): pale brown (10YR 6/3), moist, ~60% fine to medium sand, ~40% gravel		
8	PSZB-89-7.5					
9						
10	PSZB-89-10					
11						
12						
13				POORLY GRADED GRAVEL with SAND (GP): brownish yellow (10YR 6/6), moist, ~75% gravel, ~25% fine to coarse sand		
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-89 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15	PSZB-89-15			POORLY GRADED GRAVEL with SAND (GP): continued		
16						
17						
				~65% gravel, ~35% fine to coarse sand		
18						
19						
20	PSZB-89-20					
21						
22						
				light brownish gray (10YR 6/2)		
23						
24						
25	PSZB-89-25					
26						
27						
28				POORLY GRADED GRAVEL (GP): pale grayish brown (10YR 4/2), moist, ~95% gravel, ~5% fine to coarse sand		
29						
30	PSZB-89-30					
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-89 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED GRAVEL (GP): continued		
33				POORLY GRADED SAND (SP): dark brown (10YR 3/3), moist, ~95% fine to medium sand, ~5% gravel		
34						
35	PSZB-89-35					
36						
37				POORLY GRADED GRAVEL (GP): light brownish gray (10YR 6/2), moist, ~90% gravel, ~10% fine to medium sand		
38						
39						
40	PSZB-89-40					
41				Bottom of boring at 40.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
42						
43						
44						
45						
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PSZB-90**	
BORING LOCATION: Parcel 8615-001-060	ELEVATION AND DATUM: 570.13' MSL (NAVD 88)	
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/26/07	DATE FINISHED: 11/3/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 40.5	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER / FIRST: NA	COMPL. / 24 HRS.: NA / NA
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: J. Engblom/P. Jeffers/L. Budny	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 570.13' MSL (NAVD 88)		
				~3" asphalt		Air knifed to 5 feet below ground surface (bgs) by BC² Environmental on 10/26/07
1	PSZB-90-1			POORLY GRADED SAND with GRAVEL (SP): brown (10YR 4/3), moist, ~55% medium to coarse sand, ~45% gravel		
2				~6" concrete (buried slab)		1' and 2.5' samples collected from sidewalls of boring and 5' sample with a hand auger on 10/26/07, then backfilled with cuttings
3	PSZB-90-2.5			POORLY GRADED SAND with GRAVEL (SP): brown (10YR 4/3), moist, ~85% fine to medium sand, ~15% gravel		
4				~75% fine to medium sand, ~25% gravel		Began drilling on 10/31/07 Drilled to 40.5' bgs with 9" casing and hammer bit
5	PSZB-90-5					Lithology assessed from cuttings collected through the cyclone
6						
7						
8	PSZB-90-7.5					
9				POORLY GRADED GRAVEL with SAND (GP): light gray (10YR 7/1), moist, ~85% gravel, ~15% medium to coarse sand		
10	PSZB-90-10					
11						
12						
13						
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-90 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15	PSZB-90-15			POORLY GRADED GRAVEL with SAND (GP): continued		
16						
17						
18				light brownish gray (10YR 6/2), ~65% gravel, ~35% fine to medium sand		
19						
20	PSZB-90-20					
21						
22						
23				POORLY GRADED SAND with GRAVEL (SP): brown (10YR 5/3), moist, ~60% fine to coarse sand, ~40% gravel		
24						
25	PSZB-90-25					
26						
27						
28				POORLY GRADED GRAVEL (GP): very pale brown (10YR 7/3), moist, ~90% gravel, ~10% fine to medium sand		
29						
30	PSZB-90-30					
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-90 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED GRAVEL (GP): continued		
33				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, ~95% fine to medium sand, ~5% gravel		
34						
35	PSZB-90-35					
36						
37						
38				POORLY GRADED SAND with GRAVEL (SP): dark yellowish brown (10YR 4/4), moist, ~70% fine to medium sand, ~30% gravel		
39						
40	PSZB-90-40					
41				Bottom of boring at 40.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
42						
43						
44						
45						
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PSZB-91**
BORING LOCATION: Parcel 8615-021-018	ELEVATION AND DATUM: 565.17' MSL (NAVD 88)
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/25/07 / DATE FINISHED: 11/3/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 40.5 / MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER: FIRST NA / COMPL. NA / 24 HRS. NA
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: J. Engblom/L. Budny
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees / REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: 565.17' MSL (NAVD 88)	PID READING (ppm)	REMARKS
				~4" asphalt		Air knifed to 5 feet below ground surface (bgs) by BC² Environmental on 10/25/07
				~5" aggragate fill (uncemented)		
1	PSZB-91-1			POORLY GRADED SAND with GRAVEL (SP): brown (10YR 4/3), moist, ~65% medium to coarse sand, ~35% gravel		1' and 2.5' samples collected from sidewalls of boring and 5' sample with a hand auger on 10/25/07, then backfilled with cuttings
2						
3	PSZB-91-2.5					
4				POORLY GRADED GRAVEL with SAND (GP): brown (10YR 4/3), moist, ~65% gravel, ~35% medium to coarse sand		Began drilling on 11/3/07 Drilled to 40.5' bgs with 9" casing and hammer bit
5	PSZB-91-5					Lithology assessed from cuttings collected through the cyclone
6						
7				POORLY GRADED SAND (SP): brown (10YR 5/3), moist, ~90% fine to medium sand, ~10% gravel		
8	PSZB-91-7.5					
9				POORLY GRADED GRAVEL with SAND (GP): light brownish gray (10YR 6/2), moist, ~60% gravel, ~40% fine to coarse sand		
10	PSZB-91-10					
11						
12						
13				~80% gravel, ~20% fine to coarse sand		
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-91 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15	PSZB-91-15			POORLY GRADED GRAVEL with SAND (GP): continued		
16						
17						
18				~70% gravel, ~30% fine to coarse sand		
19						
20	PSZB-91-20					
21						
22						
23						
24						
25	PSZB-91-25					
26						
27						
28				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, ~95% fine to coarse sand, ~5% gravel		
29						
30	PSZB-91-30					
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-91 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED SAND (SP): continued		
33				POORLY GRADED SAND with GRAVEL (SP): brownish yellow (10YR 6/6), moist, ~60% fine to coarse sand, ~40% gravel		
34						
35	PSZB-91-35	■				
36						
37						
				~75% fine to medium sand, ~25% gravel		
38						
39						
40	PSZB-91-40	■				
41				Bottom of boring at 40.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
42						
43						
44						
45						
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PSZB-92**	
BORING LOCATION: Parcel 8615-021-018	ELEVATION AND DATUM: 565.20' MSL (NAVD 88)	
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/25/07	DATE FINISHED: 11/3/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 40.5	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER: FIRST NA; COMPL. NA; 24 HRS. NA	
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: J. Engblom/L. Budny	
HAMMER WEIGHT: NA; DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 565.20' MSL (NAVD 88)		
				~4" asphalt		Air knifed to 5 feet below ground surface (bgs) by BC² Environmental on 10/25/07
				~6" aggragate fill (uncemented)		
1	PSZB-92-1			POORLY GRADED GRAVEL with SAND (GP): brown (10YR 4/3), moist, ~80% gravel, ~20% medium to coarse sand		1' and 2.5' samples collected from sidewalls of boring and 5' sample with a hand auger on 10/25/07, then backfilled with cuttings
2						
3	PSZB-92-2.5					
4						Began drilling on 11/3/07 Drilled to 40.5' bgs with 9" casing and hammer bit
5	PSZB-92-5					
6						Lithology assessed from cuttings collected through the cyclone
7				POORLY GRADED GRAVEL (GP): pale brown (10YR 6/3), moist, ~90% gravel, ~10% fine to coarse sand		
8	PSZB-92-7.5					
9				POORLY GRADED GRAVEL with SAND (GP): pale brown (10YR 6/3), moist, ~70% gravel, ~30% fine to coarse sand		
10	PSZB-92-10					
11						
12						
13				~80% gravel, ~20% fine to coarse sand		
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-92 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15	PSZB-92-15			POORLY GRADED GRAVEL with SAND (GP): continued		
16						
17						
18				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, ~95% fine to medium sand, ~5% gravel		
19						
20	PSZB-92-20					
21						
22						
23				POORLY GRADED SAND with GRAVEL (SP): pale brown (10YR 6/3), moist, ~60% fine to medium sand, ~40% gravel		
24						
25	PSZB-92-25					
26						
27						
28						
29						
30	PSZB-92-30					
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-92 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED SAND with GRAVEL (SP): continued		
33						
34						
35	PSZB-92-35					
36						
37						
38				POORLY GRADED GRAVEL (GP): light gray (10YR 7/2), moist, ~90% gravel, ~10% fine to coarse sand		
39						
40	PSZB-92-40					
41				Bottom of boring at 40.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
42						
43						
44						
45						
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PSZB-93**
BORING LOCATION: Parcel 8615-001-031	ELEVATION AND DATUM: 563.48' MSL (NAVD 88)
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/25/07 / DATE FINISHED: 11/5/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 40.5 / MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER: FIRST NA / COMPL. NA / 24 HRS. NA
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: J. Engblom/L. Budny
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees / REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	Sample	Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 563.48' MSL (NAVD 88)		
				~4" asphalt		Air knifed to 5 feet below ground surface (bgs) by BC² Environmental on 10/25/07 1' and 2.5' samples collected from sidewalls of boring and 5' sample with a hand auger on 10/25/07, then backfilled with cuttings Began drilling on 11/5/07 Drilled to 40.5' bgs with 9" casing and hammer bit Lithology assessed from cuttings collected through the cyclone
1	PSZB-93-1			POORLY GRADED SAND with GRAVEL (SP): brown (10YR 4/3), moist, ~85% fine to medium sand, ~15% gravel		
2						
3	PSZB-93-2.5			POORLY GRADED GRAVEL with SAND (GP): brown (10YR 4/3), moist, ~65% gravel, ~35% medium to coarse sand		
4						
5	PSZB-93-5					
6						
7				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, ~90% fine to coarse sand, ~10% gravel		
8	PSZB-93-7.5					
9				POORLY GRADED GRAVEL with SAND (GP): pale brown (10YR 6/3), moist, ~70% gravel, ~30% fine to coarse sand		
10	PSZB-93-10					
11						
12						
13				~80% gravel, ~20% fine to coarse sand		
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-93 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15	PSZB-93-15	■		POORLY GRADED GRAVEL with SAND (GP): continued		
16						
17						
18				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, ~95% fine to medium sand, ~5% gravel		
19						
20	PSZB-93-20	■				
21						
22						
23				POORLY GRADED GRAVEL with SAND (GP): pale brown (10YR 6/3), moist, ~60% gravel, ~40% fine to coarse sand		
24						
25	PSZB-93-25	■				
26						
27						
28				~80% gravel, ~20% fine to medium sand		
29						
30	PSZB-93-30	■				
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PSZB-93 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED GRAVEL with SAND (GP): continued		
33				POORLY GRADED SAND with GRAVEL (SP): pale brown (10YR 6/3), moist, ~80% fine to coarse sand, ~20% gravel		
34						
35	PSZB-93-35	■				
36						
37						
				~70% fine to coarse sand, ~30% gravel		
38						
39						
40	PSZB-93-40	■				
				Bottom of boring at 40.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
41						
42						
43						
44						
45						
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PIZB-8**	
BORING LOCATION: Parcel 8615-001-060	ELEVATION AND DATUM: 570.21' MSL (NAVD 88)	
DRILLING CONTRACTOR: WDC Exploration & Wells	DATE STARTED: 10/18/07	DATE FINISHED: 10/25/07
DRILLING METHOD: Air rotary casing hammer (ARCH)	TOTAL DEPTH (ft.): 100.5	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: STAR30K	DEPTH TO WATER / FIRST: NA	COMPL. / 24 HRS.: NA / NA
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: P. Jeffers/J. Engblom	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 570.21' MSL (NAVD 88)		
				~4" asphalt		Air knifed to 1 foot below ground surface (bgs) by WDC on 10/18/07, then backfilled with cuttings
1				POORLY GRADED GRAVEL with SAND (GP): brown (10YR 4/3), moist, ~55% gravel, ~45% fine to coarse sand, trace fines		
				buried concrete slab at 1' bgs (~6")		
2				POORLY GRADED GRAVEL with SAND (GP): brown (10YR 4/3), moist, ~55% gravel, ~45% fine to coarse sand, trace fines		Break concrete slab and hand auger to refusal at 2.5' bgs on 10/25/07
3						Began drilling on 10/24/07 Drilled continuously to 100.5' bgs with 10" casing
4						Began collecting soil samples at 45' bgs
5						Lithology assessed from cuttings collected through the cyclone
6						
7				very light brown (10YR 7/3), ~55% gravel, ~45% fine to coarse sand		
8						
9						
10				POORLY GRADED SAND with GRAVEL (SP): very light brown (10YR 7/3), moist, ~75% fine to coarse sand, ~25% gravel		
11						
12						
13						
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-8 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED SAND with GRAVEL (SP): continued		
15				brown (10YR 4/3), moist, ~85% medium to coarse sand, ~15% gravel		
16						
17						
18						
19						
20				~80% medium to coarse sand, ~20% gravel		
21						
22						
23						
24						
25				~85% medium to coarse sand, ~15% gravel		
26						
27						
28						
29						
30				POORLY GRADED GRAVEL with SAND (GP): light gray (10YR 7/1), moist, ~60% gravel, ~40% medium to coarse sand		
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-8 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED GRAVEL with SAND (GP): continued		
33						
34						
35						
36						
37						
38						
39						
40				~55% gravel, ~45% medium to coarse sand		
41						
42						
43						
44						
45	PIZB-8-45			~60% gravel, ~40% medium to coarse sand		
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-8 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
49				POORLY GRADED GRAVEL with SAND (GP): continued		
50	PIZB-8-50			POORLY GRADED SAND with GRAVEL (SP): pale brown (10YR 6/3), moist, ~75% medium to coarse sand, ~25% gravel		
51						
52						
53						
54						
55				light gray (10YR 7/2), ~80% medium to coarse sand, ~20% gravel		
56						
57						
58						
59						
60	PIZB-8-60			~55% medium to coarse sand, ~45% gravel		
61						
62						
63						
64						
65						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-8 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
66				brown (10YR 4/3), ~80% fine to coarse sand, ~20% gravel		
67						
68						
69						
70	PIZB-8-70			~65% fine to coarse sand, ~35% gravel		
71						
72						
73						
74						
75				~80% fine to coarse sand, ~20% gravel		
76						
77						
78						
79						
80	PIZB-8-80			POORLY GRADED GRAVEL with SAND (GP): pale brown (10YR 6/3), moist, ~75% gravel, ~25% fine to coarse sand		
81						
82						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-8 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
83				POORLY GRADED GRAVEL with SAND (GP): continued		
84						
85				~80% gravel, ~20% fine to coarse sand		
86						
87						
88						
89						
90	PIZB-8-90			~70% gravel, ~30% fine to coarse sand		
91						
92						
93						
94						
95				POORLY GRADED SAND with GRAVEL (SP): light gray (10YR 7/2), moist, ~75% fine to coarse sand, ~25% gravel		
96						
97						
98						
99						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-8 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
100	PIZB-8-100			POORLY GRADED SAND with GRAVEL (SP): ~65% medium to coarse sand, ~35% gravel		
				Bottom of boring at 100.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
101						
102						
103						
104						
105						
106						
107						
108						
109						
110						
111						
112						
113						
114						
115						
116						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PIZB-9**	
BORING LOCATION: Parcel 8615-001-059	ELEVATION AND DATUM: 563.97' MSL (NAVD 88)	
DRILLING CONTRACTOR: Layne Christensen Company	DATE STARTED: 10/18/07	DATE FINISHED: 11/6/07
DRILLING METHOD: Dual Wall Air Percussion	TOTAL DEPTH (ft.): 100.5	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Foremost Drills AP-1000	DEPTH TO WATER / FIRST: NA	COMPL. / 24 HRS.: NA / NA
SAMPLING METHOD: Cuttings from cyclone or as noted in remarks	LOGGED BY: P. Jeffers/L. Budny	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 563.97' MSL (NAVD 88)		
				~4" asphalt		Air knifed to 5 feet below ground surface (bgs) by WDC on 10/18/07 1' and 2.5' samples collected from sidewalls of boring, and 5' sample with a hand auger on 10/18/07, then backfilled with cuttings Began drilling on 11/5/07 Drilled to 100.5' bgs with 9" casing and hammer bit Lithology assessed from cuttings collected through the cyclone
1	PIZB-9-1			POORLY GRADED GRAVEL with SAND (GP): dark brown (7.5YR 3/4), moist, ~75% gravel, ~25% medium to coarse sand		
2						
3	PIZB-9-2.5			POORLY GRADED SAND with GRAVEL (SP): dark brown (7.5YR 3/4), moist, ~70% fine to coarse sand, ~30% gravel		
4						
5	PIZB-9-5					
6						
7				POORLY GRADED GRAVEL (GP): pale brown (10YR 6/3), moist, ~90% gravel, ~10% fine sand		
8	PIZB-9-7.5					
9				POORLY GRADED GRAVEL with SAND (GP): pale brown (10YR 6/3), moist, ~70% gravel, ~30% fine to medium sand		
10	PIZB-9-10					
11						
12						
13				POORLY GRADED SAND with GRAVEL (SP): dark yellowish brown (10YR 4/4), moist, ~75% fine to medium sand, ~25% gravel		
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-9 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
15	PIZB-9-15	■		POORLY GRADED SAND with GRAVEL (SP): continued		
16						
17						
18				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, ~95% fine to medium sand, ~5% gravel		
19						
20	PIZB-9-20	■				
21						
22						
23				POORLY GRADED GRAVEL with SAND (GP): pale brown (10YR 6/3), moist, ~80% gravel, ~20% fine to coarse sand		
24						
25	PIZB-9-25	■				
26						
27						
28						
29						
30	PIZB-9-30	■				
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-9 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED GRAVEL with SAND (GP): continued		
33						
34						
35	PIZB-9-35					
36						
37						
38						
39						
40	PIZB-9-40					
41						
42						
43				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/3), moist, ~90% fine to medium sand, ~10% gravel		
44						
45	PIZB-9-45					
46						
47						
48				POORLY GRADED GRAVEL (GP): see next page		

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-9 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
49				POORLY GRADED GRAVEL (GP): pale brown (10YR 6/3), moist, ~95% gravel, ~5% fine to medium sand		
50	PIZB-9-50					
51						
52						
53						
54						
55				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, 100% fine to coarse sand		
56						
57						
58						
59						
60	PIZB-9-60					
61						
62						
63						
64						
65						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-9 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED SAND (SP): continued		
66						
67						
68						
69						
70	PIZB-9-70					
71						
72						
73						
74						
75				~90% fine to coarse sand, ~10% gravel		
76						
77						
78						
79						
80	PIZB-9-80					
81						
82						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-9 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
82				POORLY GRADED SAND (SP): continued		
83						
84						
85				light yellowish brown (10YR 6/4), ~100% fine sand, trace coarse sand		
86						
87						
88						
89						
90	PIZB-9-90					
91						
92						
93						
94						
95				~90% fine to coarse sand, ~10% gravel		
96						
97						
98						
99						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PIZB-9 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
100	PIZB-9-100			POORLY GRADED SAND (SP): continued		
				Bottom of boring at 100.5 ft bgs		Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
101						
102						
103						
104						
105						
106						
107						
108						
109						
110						
111						
112						
113						
114						
115						
116						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PDZB-20**	
BORING LOCATION: Parcel 8615-001-060	ELEVATION AND DATUM: 569.37' MSL	
DRILLING CONTRACTOR: WDC Exploration & Wells	DATE STARTED: 10/18/07	DATE FINISHED: 11/2/07
DRILLING METHOD: Air rotary casing hammer (ARCH)	TOTAL DEPTH (ft.): 200.5	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: STAR30K	DEPTH TO WATER / FIRST: NA	COMPL.: NA / 24 HRS.: NA
SAMPLING METHOD: Cuttings from cyclone	LOGGED BY: P. Jeffers/L. Budny	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 569.37' MSL		
				~4" asphalt		Air knifed to 1 foot below ground surface (bgs) by WDC on 10/18/07, then backfilled with cuttings
1				SEE BORING LOG FOR PIZB-7 (located approximately 9.7 feet northeast) FOR LITHOLOGY TO 100' bgs		Began drilling on 10/31/07 Drilled to 200.5' bgs with 10" casing
2						Began collecting samples at 110' bgs
3						Lithology assessed from cuttings collected through the cyclone
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				SEE BORING LOG FOR PIZB-7 (located approximately 9.7 feet northeast) FOR LITHOLOGY TO 100' bgs		
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				SEE BORING LOG FOR PIZB-7 (located approximately 9.7 feet northeast) FOR LITHOLOGY TO 100' bgs		
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
49				SEE BORING LOG FOR PIZB-7 (located approximately 9.7 feet northeast) FOR LITHOLOGY TO 100' bgs		
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
66				SEE BORING LOG FOR PIZB-7 (located approximately 9.7 feet northeast) FOR LITHOLOGY TO 100' bgs		
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						
81						
82						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
83				SEE BORING LOG FOR PIZB-7 (located approximately 9.7 feet northeast) FOR LITHOLOGY TO 100' bgs		
84						
85						
86						
87						
88						
89						
90						
91						
92						
93						
94						
95						
96						
97						
98						
99						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
100				SEE BORING LOG FOR PIZB-7 (located approximately 9.7 feet northeast) FOR LITHOLOGY TO 100' bgs		
101						
102						
103						
104						
105				POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, ~90% fine to coarse sand, ~10% gravel		
106						
107						
108						
109						
110	PDZB-20-110					
111						
112						
113						
114						
115				POORLY GRADED SAND with GRAVEL (SP): brown (10YR 4/3), moist, ~70% fine to coarse sand, ~30% gravel		
116						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED SAND with GRAVEL (SP): continued		
117						
118						
119						
120	PDZB-20-120					
121						
122						
123						
124						
125				yellowish brown (10YR 5/4), ~85% fine to coarse sand, ~15% gravel		
126						
127						
128						
129						
130	PDZB-20-130					
131						
132						
133						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED SAND with GRAVEL (SP): continued		
134						
135				~70% fine to coarse sand, ~30% gravel		
136						
137						
138						
139						
140	PDZB-20-140					
141						
142						
143						
144						
145				~65% fine to coarse sand, ~35% gravel		
146						
147						
148						
149						
150						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
151	PDZB-20-150	■		POORLY GRADED SAND with GRAVEL (SP): continued		
152						
153						
154						
155						
156						
157						
158						
159						
160	PDZB-20-160	■				
161						
162						
163						
164						
165				POORLY GRADED GRAVEL with SAND (GP): light yellowish brown (10YR 6/4), moist, ~60% gravel, ~40% fine to medium sand		
166						
167						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
168				POORLY GRADED GRAVEL with SAND (GP): continued		
169						
170	PDZB-20-170					
171						
172						
173						
174						
175				POORLY GRADED SAND with GRAVEL (SP): yellowish brown (10YR 5/4), moist, ~80% fine to coarse sand, ~20% gravel		
176						
177						
178						
179						
180	PDZB-20-180					
181						
182						
183						
184						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-20 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
185				POORLY GRADED SAND with GRAVEL (SP): continued		
186						
187						
188						
189						
190	PDZB-20-190					
191						
192						
193						
194						
195						
196						
197						
198						
199						
200	PDZB-20-200			Bottom of boring at 200.5 ft bgs		Refusal at 200.5' bgs Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
201						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA Azusa and Irwindale, California	**Log of Boring No. PDZB-21**	
BORING LOCATION: Parcel 8615-001-059	ELEVATION AND DATUM: 566.12' MSL	
DRILLING CONTRACTOR: WDC Exploration & Wells	DATE STARTED: 10/18/07	DATE FINISHED: 11/1/07
DRILLING METHOD: Air rotary casing hammer (ARCH)/Stratex	TOTAL DEPTH (ft.): 230.5	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: STAR30K	DEPTH TO WATER / FIRST: NA	COMPL.: NA / 24 HRS.: NA
SAMPLING METHOD: Cuttings from cyclone	LOGGED BY: P. Jeffers/L. Budny/T. Naing/G. Rees	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: G. Rees	REG. NO. 6612

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				Surface Elevation: 566.12' MSL		
				~4" asphalt		Air knifed to 5 feet below ground surface (bgs) by WDC on 10/18/07, then backfilled with cuttings
1				POORLY GRADED GRAVEL with SAND (GP): dark brown (7.5YR 3/4), moist, ~70% gravel, ~30% medium to coarse sand		
2						Began drilling on 10/26/07 Drilled to 230.5' bgs with 10" casing and hammer bit
3						Began collecting samples at 35' bgs
4				POORLY GRADED SAND with GRAVEL (SP): dark brown (7.5YR 3/4), moist, ~85% fine to medium sand, ~15% gravel		Lithology assessed from cuttings collected through the cyclone
5						
6						
7						
8						
9						
10				~75% fine to medium sand, ~25% gravel		
11						
12						
13						
14						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED SAND with GRAVEL (SP): continued		
15				POORLY GRADED GRAVEL with SAND (GP): white (10R 8/1), moist, ~75% gravel, ~25% medium to coarse sand		
16						
17						
18						
19						
20				~60% gravel, ~40% fine to coarse sand		
21						
22						
23				POORLY GRADED SAND with GRAVEL (SP): light brownish gray (10YR 6/2), moist, ~60% fine to coarse sand, ~40% gravel		
24						
25						
26						
27						
28				POORLY GRADED SAND (SP): brown (10YR 5/3), moist, ~90% fine to coarse sand, ~10% gravel		
29						
30						
31						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
32				POORLY GRADED SAND (SP): continued		
33				POORLY GRADED GRAVEL with SAND (GP): light brownish gray (10YR 6/2), moist, ~80% gravel, ~20% fine to coarse sand		
34						
35	PDZB-21-35					
36						
37						
38				POORLY GRADED SAND with GRAVEL (SP): light brownish gray (10YR 6/2), moist, ~75% fine to medium sand, ~25% gravel		
39						
40	PDZB-21-40					
41						
42						
43						
44						
45	PDZB-21-45					
46						
47						
48				POORLY GRADED SAND (SP): see next page		

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
49				POORLY GRADED SAND (GP): brown (10YR 5/3), moist, ~95% fine to coarse sand, ~5% gravel		
50	PDZB-21-50					
51						
52						
53						
54						
55				~90% fine to coarse sand, ~10% gravel		
56						
57						
58						
59						
60	PDZB-21-60					
61						
62						
63						
64						
65						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
66				POORLY GRADED SAND (SP): continued		
67						
68				POORLY GRADED GRAVEL with SAND (GP): light brownish gray (10YR 6/2), moist, ~70% gravel, ~30% fine to medium sand		
69						
70	PDZB-21-70					
71						
72						
73						
74						
75				~55% gravel, ~45% fine to medium sand		
76						
77						
78						
79						
80	PDZB-21-80					
81						
82						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED GRAVEL with SAND (GP): continued		
83						
84						
85						
86						
87						
88						
89						
90	PDZB-21-90			~75% gravel, ~25% fine to coarse sand		
91						
92						
93						
94						
95				~85% gravel, ~15% fine to coarse sand		
96						
97						
98				POORLY GRADED SAND with GRAVEL (SP): light yellowish brown (10YR 6/4), moist, ~75% fine to coarse sand, ~25% gravel		
99						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED SAND with GRAVEL (SP): continued		
100	PDZB-21-100					
101						
102						
103						
104						
105				~60% fine to coarse sand, ~40% gravel		
106						
107						
108				POORLY GRADED GRAVEL with SAND (GP): grayish brown (10YR 5/2), moist, ~75% gravel, ~25% fine to coarse sand		
109						
110	PDZB-21-110					
111						
112						
113						
114						
115				~85% gravel, ~15% fine to coarse sand		
116						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
117				POORLY GRADED GRAVEL with SAND (GP): continued		
118						
119						
120	PDZB-21-120	■		light brownish gray (10YR 6/2), ~65% gravel, ~35% fine to medium sand		
121						
122						
123						
124						
125				~55% gravel, ~45% fine to medium sand		
126						
127						
128				POORLY GRADED SAND with GRAVEL (SP): light brownish gray (10YR 6/2), moist, ~60% fine to coarse sand, ~40% gravel		
129						
130	PDZB-21-130	■				
131						
132						
133						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
134				POORLY GRADED SAND with GRAVEL (SP): continued		
135						
136						
137						
138				POORLY GRADED GRAVEL with SAND (GP): grayish brown (10YR 5/2), moist, ~85% gravel, ~15% fine to coarse sand		
139						
140	PDZB-21-140					
141						
142						
143				POORLY GRADED SAND with GRAVEL (SP): grayish brown (10YR 5/2), moist, ~70% fine sand, ~30% gravel		
144						
145						
146						
147						
148				POORLY GRADED GRAVEL with SAND (GP): grayish brown (10YR 5/2), moist, ~80% gravel, ~20% fine to coarse sand		
149						
150						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
150	PDZB-21-150	■		POORLY GRADED GRAVEL with SAND (GP): continued		
151						
152						
153						
154						
155				~60% gravel, ~40% fine to coarse sand		
156						
157						
158						
159						
160	PDZB-21-160	■				
161						
162						
163						
164						
165						
166						
167						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
168				POORLY GRADED GRAVEL with SAND (GP): continued ~85% gravel, ~15% fine to medium sand		
169						
170	PDZB-21-170					
171						
172						
173						
174						
175						
176						
177						
178						
179						
180	PDZB-21-180					
181						
182						
183						
184						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED GRAVEL with SAND (GP): continued		
185						
186						
187						
				~60% gravel, ~40% fine to coarse sand		
188						
189						
190	PDZB-21-190					
191						
192						
193						
194				~85% gravel, ~15% fine to coarse sand		
195						
196						
197						
198						
199						
200	PDZB-21-200					
201						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
				POORLY GRADED GRAVEL with SAND (GP): continued		
202						
203						
204						
				~60% gravel, ~40% fine to coarse sand		
205						
206						
207						
208						
209						
210	PDZB-21-210			~80% gravel, ~20% fine to coarse sand		
211						
212						
213						
214						
215						
216						
217						
218						

RMRK3

PROJECT: AZUSA/IRWINDALE STUDY AREA
Azusa and Irwindale, California

Log of Boring No. PDZB-21 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ 6 inches	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	PID READING (ppm)	REMARKS
219				POORLY GRADED GRAVEL with SAND (GP): continued		
220	PDZB-21-220					
221						
222						
223						
224						
225						
226						
227						
228						
229						
230	PDZB-21-230					
				Bottom of boring at 230.5 ft bgs		Refusal at 230.5' bgs Boring backfilled with bentonite chips and continuously hydrated Surface patched with asphalt
231						
232						
233						
234						
235						

RMRK3

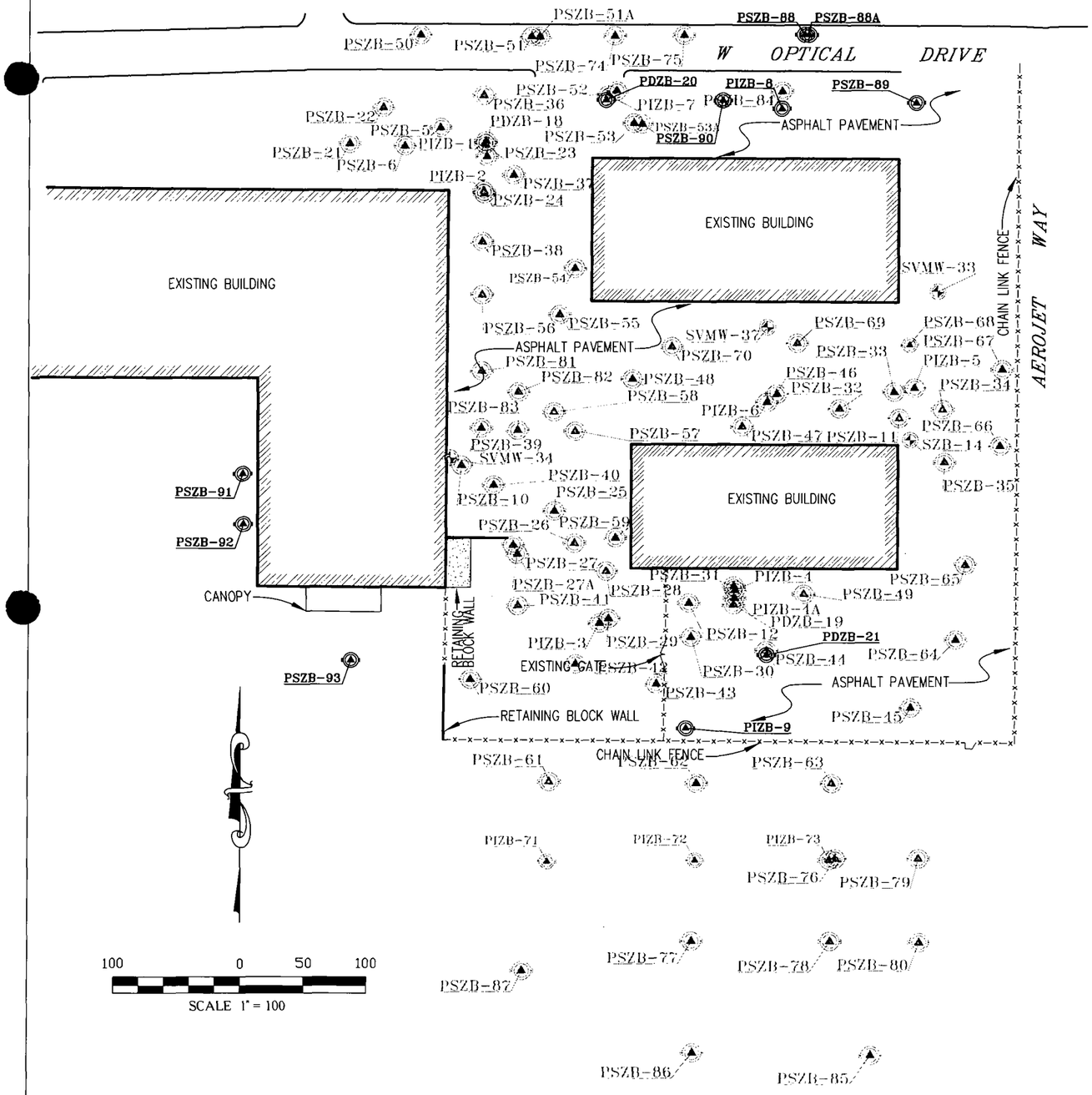
APPENDIX B

SURVEY DATA

SITE PLAN

BORE HOLE & VAPOR WELL LOCATIONS

AEROJET - 1300 W OPTICAL DRIVE, AZUSA, CA 91702



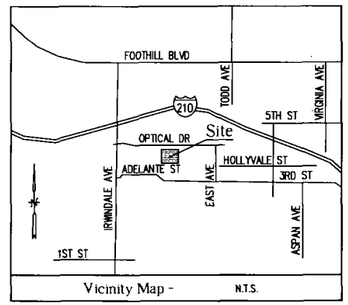
DATE OF SURVEY: NOVEMBER 15, 2007

BORE HOLES

WELL	NORTH	EAST	LATITUDE (DD)	LONGITUDE (DD)	FS (ELEVATION)
PDZB-20	1869164.96	6583291.99	34.1285316	-117.9285435	569.37
PDZB-21	1868718.43	6583418.83	34.1273043	-117.9281254	566.12
PIZB-8	1869157.93	6583430.73	34.1285120	-117.9280850	570.21
PIZB-9	1868659.26	6583355.71	34.1271419	-117.9283341	563.97
PSZB-88	1869216.98	6583448.50	34.1286742	-117.9280262	572.67
PSZB-88A	1869216.90	6583452.02	34.1286740	-117.9280146	572.63
PSZB-89	1869162.63	6583536.81	34.1285247	-117.9277345	571.59
PSZB-90	1869164.50	6583384.63	34.1285301	-117.9282373	570.13
PSZB-91	1868864.84	6583003.38	34.1277075	-117.9294978	565.17
PSZB-92	1868824.24	6583004.06	34.1275959	-117.9294956	565.20
PSZB-93	1868714.68	6583089.49	34.1272947	-117.9292136	563.48

Legend

⊙	BORE HOLE	FS	FINISH SURFACE
	CHAIN LINK FENCE	TOC	TOP OF CASING
	CONCRETE	TOR	TOP OF RIM
		⊕	VAPOR WELL



Vicinity Map - N.T.S.

DATES OF SURVEY

APRIL 20, 2005
FEBRUARY 21, 2006
MARCH 17, 2006
MARCH 29, 2006
APRIL 17, 2007
NOVEMBER 15, 2007

BENCH MARK

THE ELEVATIONS SHOWN HEREON ARE BASED UPON THE NGS MONUMENT EV9357, ELEVATION = 687.00 FEET (NAVD 88)

COORDINATES

THE COORDINATES SHOWN HEREON ARE BASED UPON THE STATE PLANE COORDINATE SYSTEM OF 1983 (NAD 83), CALIFORNIA ZONE V.

PREPARED FOR

GEOMATRIX COUNSULTANT, INC.
250 E. RINCON STREET, SUITE 240
CORONA, CA 92829
PHONE (951) 273-7400
FAX (951) 273-7420

NO.	DATE	REVISIONS	BY
	11-15-07	ADD BORE HOLES	GBM

CALVADA SURVEYING, INC.
411 Jenks Cir., Suite 205, Corona, CA 92880
Phone: 951-280-9960 Fax: 951-280-9746
Toll Free: 800-CALVADA www.calvada.com

JOB NO. 07728

APPENDIX C

LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS

Calscience
Environmental
Laboratories, Inc.

Supplemental Report 1

October 26, 2007

The original report has been revised/corrected.

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-10-1406**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/18/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/18/07
Work Order No: 07-10-1406

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix
PIZB-9-1	**07-10-1406-1**	**10/18/07**	**Solid**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	120	5.9	0.989		ug/kg	10/22/07	10/23/07	EPA 6850

Client Sample Number	Lab Sample Number	Date Collected	Matrix
PIZB-9-2.5	**07-10-1406-2**	**10/18/07**	**Solid**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	58	5.9	0.991		ug/kg	10/22/07	10/23/07	EPA 6850

Client Sample Number	Lab Sample Number	Date Collected	Matrix
PIZB-9-5	**07-10-1406-3**	**10/18/07**	**Solid**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	67	5.9	0.991		ug/kg	10/22/07	10/23/07	EPA 6850

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Solid**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	ND	6.0	1		ug/kg	10/22/07	10/23/07	EPA 6850

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: N/A
Work Order No: 07-10-1406

Project: AEROJET-AISA / 7190.006

Matrix: Solid

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	EPA 6850	PIZB-9-5	10/23/07	10/22/07	85	78	50-150	4	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: N/A
Work Order No: 07-10-1406

Project: AEROJET-AISA / 7190.006

Matrix: Solid

Parameter	Method	Quality Control Sample ID	Date Extracted	Date Analyzed	LCS % REC	LCSD % REC	%REC CL	RPD	RPD CL	Qual
Perchlorate	EPA 6850	099-12-654-1	10/22/07	10/23/07	90	90	60-140	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-10-1406

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Don Burley

From: Richard Rees [RRees@geomatrix.com]
Sent: Thursday, October 25, 2007 2:53 PM
To: Don Burley
Subject: RE: AEROJET-AISA / 7190.006 / CEL 07-10-1406

Thanks Don. Sample names should be PIZB-9- Not P12B-. "I" stands for intermediate.

The remaining samples will be PDZB- or PSZB- We will try to be a little more clear on our chain-of-custody forms Thank you.

Rick Rees

From: Don Burley [mailto:dburley@calscience.com]
Sent: Thursday, October 25, 2007 1:34 PM
To: Richard Rees
Subject: AEROJET-AISA / 7190.006 / CEL 07-10-1406

Donald L. Burley
Project Manager
Calscience Environmental
Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427
Tel.: 714-895-5494
Fax : 714-894-7501
dburley@calscience.com

CHAIN-OF-CUSTODY RECORD

(1406) COR 11028

PROJECT NAME: AEROJET - AISA			DATE: 10.18.07 / PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: CALSCIENCE	CLIENT INFORMATION: GEOMATRIX	REPORTING REQUIREMENTS:
RESULTS TO: RICK REES	LABORATORY ADDRESS:		
TURNAROUND TIME: NORMAL			
SAMPLE SHIPMENT METHOD: LAB COURIER	LABORATORY CONTACT: DON BURNY		GEOTRACKER REQUIRED YES / NO (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): Paul Jeffers

DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 6850 *	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
10.18.07	1110	P1ZB-9-1	X	4 oz Jar	S			X		1	
10.18.07	1125	P1ZB-9-2.5	X	4 oz Jar	S			X		1	
10.18.07	1207	P1ZB-9-5	X	4 oz Jar	S			X		1	

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE: Paul Jeffers	10.18.07	1250	SIGNATURE: Brett Kolb	10/18/07	1250
PRINTED NAME: PAUL JEFFERS			PRINTED NAME: Brett Kolb		
COMPANY: GEOMATRIX			COMPANY: CEL		
SIGNATURE: Brett Kolb	10-18-07	1951	SIGNATURE: Sherifama		1500
PRINTED NAME: Brett Kolb			PRINTED NAME: Sherifama		
COMPANY: CEL			COMPANY: CEL 10.18.07		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 3

SAMPLING COMMENTS: * EPA 6850 USING A REPORTING LIMIT OF 6 ug/kg

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 10 - 1406

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geomatrix DATE: 10-18-07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
✓ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

1.2 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: BKZ

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: BK

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			~
Tedlar bag(s) free of condensation			✓

Initial: BKZ

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 14, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-10-1406**		

This memorandum presents a summary data quality review of three primary soil samples collected on October 18, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PIZB-9-1	07-10-1406-1
PDZB-9-2.5	07-10-1406-2
PDZB-9-5	07-10-1406-3

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure. The temperature of the cooler was 1.2 °C, less than the acceptable range of 4 +/- 2 °C. Samples were not qualified based on the lower temperature.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable

2. Blanks – Acceptable

3. Laboratory Control Samples (LCS) – Acceptable

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-10-1406 is 100 percent complete. The data usability is based on EPA's guidance documents. Few problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PIZB-9-1	none			
PDZB-9-2.5	none			
PDZB-9-5	none			

Calscience
Environmental
Laboratories, Inc.

November 01, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-10-1836**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/25/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE with nelac

Geomatrix Consultants, Inc.		Date Received:	10/25/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-1836
Corona, CA 92879-1363		Preparation:	N/A
		Method:	EPA 314.0

Project: AEROJET-AISA / 7190.006 — Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
20071024-EB	**07-10-1836-1**	**10/24/07**	**Aqueous**	**IC 6**	**N/A**	**10/25/07**	**071025L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	3.0	1		ug/L

Method Blank	099-05-203-687	N/A	Aqueous	IC 6	N/A	10/25/07	071025L02

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	3.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/25/07
Work Order No: 07-10-1836
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-8-45	**07-10-1836-2**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	98	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-8-50	**07-10-1836-3**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	100	6.0	0.994		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-8-60	**07-10-1836-4**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	420	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-8-70	**07-10-1836-5**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	1400	30	4.98		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-8-80	**07-10-1836-6**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	860	12	1.98		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-8-90	**07-10-1836-7**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	160	6.0	1.00		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	10/25/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-1836
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88-1	**07-10-1836-8**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.995		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88-2.5	**07-10-1836-9**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88-5	**07-10-1836-10**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	65	5.9	0.989		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-8-100	**07-10-1836-11**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	77	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-1	**07-10-1836-12**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	250	6.0	0.993		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-2.5	**07-10-1836-13**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	300	6.0	1.00		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/25/07
Work Order No: 07-10-1836
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-5	**07-10-1836-14**	**10/25/07**	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	300	6.0	1.00		ug/kg

Method Blank	099-12-654-2	N/A	Solid	LC/MS 1	10/25/07	10/26/07	071025L01

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/25/07
Work Order No: 07-10-1836
Preparation: N/A
Method: EPA 314.0

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
07-10-1778-1	**Aqueous**	**IC 6**	**N/A**	**10/25/07**	**071025S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	100	97	80-120	2	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.	Date Received: 10/25/07
250 East Rincon Street, Suite 204	Work Order No: 07-10-1836
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PSZB-88-2.5	**Solid**	**LC/MS 1**	**10/25/07**	**10/26/07**	**071025S1H**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	79	65	50-150	19	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.	Date Received: N/A
250 East Rincon Street, Suite 204	Work Order No: 07-10-1836
Corona, CA 92879-1363	Preparation: N/A
	Method: EPA 314.0

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-05-203-687	Aqueous	IC 6	N/A	10/25/07	071025L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	97	96	85-115	1	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-10-1836
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-654-2	Solid	LC/MS 1	10/26/07	17-lfb 100 mg-kg 10-10	071025L01

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Perchlorate	100	94.1	94	60-140	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-10-1836

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD 07-10-1856 COR 10071

PROJECT NAME: AEROJET - AISA			DATE: 10/24/2007 PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: CALSCIENCE	CLIENT INFORMATION: GEOMATRIX	REPORTING REQUIREMENTS:
RESULTS TO: RICK REES	LABORATORY ADDRESS:		
TURNAROUND TIME: NORMAL			
SAMPLE SHIPMENT METHOD: LAB COURIER	LABORATORY CONTACT: DON BUALY		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

DATE	TIME	SAMPLE NUMBER	EPA 6850	EPA 314	24 HR: RUSH	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
10/24/2007	11:10	20071024-EB		X			W			X		2	1 container
10/25/2007	0745	P12B-8-45	X			120 ml clear	S			X		1	
10/25/2007	0750	P12B-8-50	X				S			X		1	
10/25/2007	0855	P12B-8-60	X				S			X		1	
10/25/2007	0905	P12B-8-70	X				S			X		1	
10/25/2007	0945	P12B-8-80	X				S			X		1	
10/25/2007	10:00	P12B-8-90	X		X		S			X		1	
10/25/2007	10:20	PS2B-88-1	X				S			X		1	
10/25/2007	10:25	PS2B-88-2.5	X				S			X		1	
10/25/2007	10:30	PS2B-88-5	X				S			X		1	
10/25/2007	10:15	P12B-8-100	X		X		S			X		1	
10/25/2007	12:20	PS2B-93-1	X				S			X		1	
10/25/2007	12:25	PS2B-93-2.5	X				S			X		1	
10/25/2007	12:30	PS2B-93-5	X				S			X		1	

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	10/25/2007	1445	SIGNATURE: Kristina Mucka	10/25/07	1445
PRINTED NAME: JOSIAH ENGBLOM			PRINTED NAME: Kristina Mucka		
COMPANY: Geomatrix Consultants			COMPANY: CEL		
SIGNATURE: Kristina Mucka	10/25/07	1540	SIGNATURE:	10/25/07	1540
PRINTED NAME: Kristina Mucka			PRINTED NAME: N. Ollise		
COMPANY: CEL			COMPANY: CALSCIENCE		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS:

SAMPLING COMMENTS: EPA 314 Reporting Limit 3.0 mg/L
EPA 6850 Reporting Limit of 6 mg/kg

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 10 - 1836

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geomatrix DATE: 10/25/07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- ✓ Chilled, cooler with temperature blank provided.
- _____ Chilled, cooler without temperature blank.
- _____ Chilled and placed in cooler with wet ice.
- _____ Ambient and placed in cooler with wet ice.
- _____ Ambient temperature.

3.1 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- _____ °C Temperature blank.
- _____ °C IR thermometer.
- _____ Ambient temperature.

Initial: KM

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: —

Initial: KM

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			—

Initial: KM

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 14, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-10-1836**		

This memorandum presents a summary data quality review of thirteen primary soil samples and one equipment blank collected on October 24 and 25, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
20071024-EB	07-10-1836-1
PIZB-8-45	07-10-1836-2
PIZB-8-50	07-10-1836-3
PIZB-8-60	07-10-1836-4
PIZB-8-70	07-10-1836-5
PIZB-8-80	07-10-1836-6
PIZB-8-90	07-10-1836-7
PSZB-88-1	07-10-1836-8
PSZB-88-2.5	07-10-1836-9
PSZB-88-5	07-10-1836-10
PIZB-8-100	07-10-1836-11
PSZB-93-1	07-10-1836-12
PSZB-93-2.5	07-10-1836-13
PSZB-93-5	07-10-1836-14

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If

data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable

2. Blanks – Acceptable
   One equipment blank was submitted with these samples and was free of contamination.

3. Laboratory Control Samples (LCS) – Acceptable

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-10-1836 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
20071024-EB	none			
PIZB-8-45	none			
PIZB-8-50	none			
PIZB-8-60	none			
PIZB-8-70	none			
PIZB-8-80	none			
PIZB-8-90	none			
PSZB-88-1	none			
PSZB-88-2.5	none			
PSZB-88-5	none			
PIZB-8-100	none			
PSZB-93-1	none			
PSZB-93-2.5	none			

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PSZB-93-5	none			

Calscience
Environmental
Laboratories, Inc.

November 02, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-10-1943**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/26/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	10/26/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-1943
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-1	**07-10-1943-1**	**10/25/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-2.5	**07-10-1943-2**	**10/25/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-5	**07-10-1943-3**	**10/25/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-1	**07-10-1943-4**	**10/25/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-2.5	**07-10-1943-5**	**10/25/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.995		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-5	**07-10-1943-6**	**10/25/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.999		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/26/07
Work Order No: 07-10-1943
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-1	**07-10-1943-7**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	460	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-2.5	**07-10-1943-8**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	140	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-5	**07-10-1943-9**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/31/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	9800	120	19.9		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-1	**07-10-1943-10**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	9.4	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-2.5	**07-10-1943-11**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-5	**07-10-1943-12**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.994		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	10/26/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-1943
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006 Page 3 of 3

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-35	**07-10-1943-13**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	79	6.0	0.993		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-40	**07-10-1943-14**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	230	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-45	**07-10-1943-15**	**10/26/07**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	89	5.9	0.988		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-3**	**N/A**	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.	Date Received: 10/26/07
250 East Rincon Street, Suite 204	Work Order No: 07-10-1943
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PSZB-90-2.5	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	91	76	50-150	7	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.	Date Received: N/A
250 East Rincon Street, Suite 204	Work Order No: 07-10-1943
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-3	**Solid**	**LC/MS 1**	**10/29/07**	**10/30/07**	**071029L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	104	100	60-140	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-10-1943

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD (07-10-1943) COR 10840

PROJECT NAME: AEROJET - AOSA			DATE: 10/25/2007 PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: CALSCIENCE	CLIENT INFORMATION: GEOMATRIX	REPORTING REQUIREMENTS:
RESULTS TO: RICK REES	LABORATORY ADDRESS:		EPA 6850: 6 Mg/kg
TURNAROUND TIME: NORMAL			
SAMPLE SHIPMENT METHOD: LAB COURIER	LABORATORY CONTACT: BON BURLY		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): David Gamma

DATE	TIME	SAMPLE NUMBER	EPA 6850	24-HR RUSH	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
10/25/07	1420	PSZB-91-1	X		120 ml clear	S			X		1	
10/25/07	1425	PSZB-91-2.5	X			S			X		1	
10/25/07	1430	PSZB-91-5	X			S			X		1	
10/25/07	1650	PSZB-92-1	X			S			X		1	
10/25/07	1655	PSZB-92-2.5	X			S			X		1	
10/25/07	1700	PSZB-92-5	X			S			X		1	
10/26/07	0955	PSZB-90-1	X			S			X		1	
10/26/07	1006	PSZB-90-2.5	X			S			X		1	
10/26/07	1005	PSZB-90-5	X			S			X		1	
10/26/07	11:35	PSZB-89-1	X			S			X		1	
10/26/07	11:40	PSZB-89-2.5	X			S			X		1	
10/26/07	11:45	PSZB-89-5	X			S			X		1	
10/26/07	14:30	PDZB-21-35	X			S			X		1	
10-26-07	14:45	PDZB-21-40	X			S			X		1	
10-26-07	14:50	PDZB-21-45	X			S			X		1	

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE: R Rees	10-26-07	15:15	SIGNATURE: Kristina Mucha	10/26/07	1515
PRINTED NAME: G Richard Rees			PRINTED NAME: Kristina Mucha		
COMPANY: Geomatrix			COMPANY: CEL		
SIGNATURE: Kristina Mucha	10/26/07	1653	SIGNATURE: David Gamma		
PRINTED NAME: Kristina Mucha			PRINTED NAME: Shen Gama		
COMPANY: CEL			COMPANY: CEL	10-26-07	1653
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 15

SAMPLING COMMENTS:

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 10 - 1943

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geomatrix DATE: 10/26/07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- — Chilled, cooler with temperature blank provided.
- _____ Chilled, cooler without temperature blank.
- _____ Chilled and placed in cooler with wet ice.
- _____ Ambient and placed in cooler with wet ice.
- _____ Ambient temperature.

3.1 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- _____ °C Temperature blank.
- _____ °C IR thermometer.
- _____ Ambient temperature.

Initial: KM

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: —

Initial: KM

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	—		
Sampler's name indicated on COC	—		
Sample container label(s) consistent with custody papers	—		
Sample container(s) intact and good condition	—		
Correct containers and volume for analyses requested	—		
Proper preservation noted on sample label(s)	—		
VOA vial(s) free of headspace.			—
Tedlar bag(s) free of condensation			—

Initial: KM

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 14, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-10-1943**		

This memorandum presents a summary data quality review of fifteen primary soil samples collected on October 25 and 26, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PSZB-91-1	07-10-1943-1
PSZB-91-2.5	07-10-1943-2
PSZB-91-5	07-10-1943-3
PSZB-92-1	07-10-1943-4
PSZB-92-2.5	07-10-1943-5
PSZB-92-5	07-10-1943-6
PSZB-90-1	07-10-1943-7
PSZB-90-2.5	07-10-1943-8
PSZB-90-5	07-10-1943-9
PSZB-89-1	07-10-1943-10
PSZB-89-2.5	07-10-1943-11
PSZB-89-5	07-10-1943-12
PDZB-21-35	07-10-1943-13
PDZB-21-40	07-10-1943-14
PDZB-21-45	07-10-1943-15

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD)

results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable
2. Blanks – Acceptable
3. Laboratory Control Samples (LCS) – Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable
5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-10-1943 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PSZB-91-1	none			
PSZB-91-2.5	none			
PSZB-91-5	none			
PSZB-92-1	none			
PSZB-92-2.5	none			
PSZB-92-5	none			
PSZB-90-1	none			
PSZB-90-2.5	none			
PSZB-90-5	none			
PSZB-89-1	none			
PSZB-89-2.5	none			
PSZB-89-5	none			
PDZB-21-35	none			
PDZB-21-40	none			

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PDZB-21-45	none			

Calscience
Environmental
Laboratories, Inc.

November 05, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-10-2015**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/29/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/29/07
Work Order No: 07-10-2015
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-50	**07-10-2015-1**	**10/26/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	350	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-60	**07-10-2015-2**	**10/26/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	190	6.0	0.995		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-70	**07-10-2015-3**	**10/26/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	690	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-80	**07-10-2015-4**	**10/26/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	360	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-90	**07-10-2015-5**	**10/26/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	600	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-100	**07-10-2015-6**	**10/26/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	650	6.0	1.00		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/29/07
Work Order No: 07-10-2015
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-110	**07-10-2015-7**	**10/26/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	270	6.0	0.999		ug/kg

Method Blank	**099-12-654-4**	**N/A**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/29/07
Work Order No: 07-10-2015
Preparation: Cartridge
Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PDZB-21-60	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	97	140	50-150	14	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: N/A
Work Order No: 07-10-2015
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-4	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	103	98	60-140	6	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-10-2015

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD (2015) COR 10832

PROJECT NAME: Aerojet AISA | DATE: 10-26-07 | PAGE 1 OF 1

PROJECT NUMBER: 7190.006 | LABORATORY NAME: Calscience | CLIENT INFORMATION: Geomatrix | REPORTING REQUIREMENTS: EPA 6850 RL=6 ug/kg

RESULTS TO: Rick Rees | LABORATORY ADDRESS:

TURNAROUND TIME: Normal unless indicated

SAMPLE SHIPMENT METHOD: Lab Courier | LABORATORY CONTACT: Don Burley | GEOTRACKER REQUIRED: YES (NO)

LABORATORY PHONE NUMBER: (714)-895-5494 | SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): R Rees

ANALYSES: EPA 6850

	DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
1	10-26-07	14:57	PDZB-21-50	1 40z Glass Jar	S			X		1	
2	10-26-07	15:10	PDZB-21-60	1 40z Glass Jar	S			X		1	
3	10-26-07	15:17	PDZB-21-70	1 40z Glass Jar	S			X		1	
4	10-26-07	15:35	PDZB-21-80	1 40z Glass Jar	S			X		1	
5	10-26-07	15:45	PDZB-21-90	1 40z Glass Jar	S			X		1	
6	10-26-07	16:00	PDZB-21-100	1 40z Glass Jar	S			X		1	
7	10-26-07	16:15	PDZB-21-110	1 40z Glass Jar	S			X		1	

TOTAL NUMBER OF CONTAINERS: 7

SAMPLING COMMENTS:

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE: R Rees	10-29-07	13:50	SIGNATURE: Brett Kolb	10/29/07	13:50
PRINTED NAME: Richard Rees			PRINTED NAME: Brett Kolb		
COMPANY: Geomatrix			COMPANY: CEL		
SIGNATURE: Brett Kolb	10/29/07	14:40	SIGNATURE: Shen Fang		1440
PRINTED NAME: Brett Kolb			PRINTED NAME: Shen Fang		
COMPANY: CEL			COMPANY: CEL 10.29.07		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 10 - 2015

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geomatrix DATE: 10-29-07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- _____ Chilled, cooler with temperature blank provided.
- _____ Chilled, cooler without temperature blank.
- ✓ Chilled and placed in cooler with wet ice.
- _____ Ambient and placed in cooler with wet ice.
- _____ Ambient temperature.

1.4 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- _____ °C Temperature blank.
- _____ °C IR thermometer.
- _____ Ambient temperature.

Initial: BK

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: BK

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: BK

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 14, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-10-2015**		

This memorandum presents a summary data quality review of seven primary soil samples collected on October 26, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PDZB-21-50	07-10-2015-1
PDZB-21-60	07-10-2015-2
PDZB-21-70	07-10-2015-3
PDZB-21-80	07-10-2015-4
PDZB-21-90	07-10-2015-5
PDZB-21-100	07-10-2015-6
PDZB-21-110	07-10-2015-7

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure. The temperature of the cooler was 1.4 °C, less than the acceptable range of 4 +/- 2 °C. Samples were not qualified based on the lower temperature.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable
2. Blanks – Acceptable
3. Laboratory Control Samples (LCS) – Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable
5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-10-2015 is 100 percent complete. The data usability is based on EPA's guidance documents. Few problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PDZB-21-50	none			
PDZB-21-60	none			
PDZB-21-70	none			
PDZB-21-80	none			
PDZB-21-90	none			
PDZB-21-100	none			
PDZB-21-110	none			

Calscience
Environmental
Laboratories, Inc.

November 05, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-10-2016**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/29/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE with nelac

Geomatrix Consultants, Inc.	Date Received: 10/29/07
250 East Rincon Street, Suite 204	Work Order No: 07-10-2016
Corona, CA 92879-1363	Preparation: N/A
	Method: EPA 314.0

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
20071029-EB	**07-10-2016-1**	**10/29/07**	**Aqueous**	**IC 6**	**N/A**	**10/30/07**	**071029L03**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	3.0	1		ug/L

Method Blank	099-05-203-693	N/A	Aqueous	IC 6	N/A	10/30/07	071029L03

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	3.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	10/29/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-2016
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006 — Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88-7.5	**07-10-2016-2**	**10/29/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	36	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88-10	**07-10-2016-3**	**10/29/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.993		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88-15	**07-10-2016-4**	**10/29/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.993		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-4**	**N/A**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.	Date Received:	10/29/07
250 East Rincon Street, Suite 204	Work Order No:	07-10-2016
Corona, CA 92879-1363	Preparation:	N/A
	Method:	EPA 314.0

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
20071029-EB	**Aqueous**	**IC 6**	**N/A**	**10/30/07**	**071029S03**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	93	94	80-120	0	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/29/07
Work Order No: 07-10-2016
Preparation: Cartridge
Method: EPA 6850

Project AERojet-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
07-10-2015-2	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	97	140	50-150	14	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-10-2016
Corona, CA 92879-1363		Preparation:	N/A
		Method:	EPA 314.0

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-05-203-693	Aqueous	IC 6	N/A	10/30/07	071029L03

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	100	100	85-115	0	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received:	N/A
Work Order No:	07-10-2016
Preparation:	Cartridge
Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-4	Solid	LC/MS 1	10/30/07	10/31/07	071030L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	103	98	60-140	6	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-10-2016

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD 2016 COR 10751

PROJECT NAME: AISA			DATE: 29 Oct 2007 PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: CalScience	CLIENT INFORMATION:	REPORTING REQUIREMENTS:
RESULTS TO: Rick Rees	LABORATORY ADDRESS:		EPA 314 Reporting Limit of 3.0 ug/L
TURNAROUND TIME: Normal			EPA 6850 Reporting Limit of 6.0 ug/L
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Don Burley		GEOTRACKER REQUIRED YES NO
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

	DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 6850	ANALYSES: EPA 314	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
1	10-29-07	1058	20071029-EB		X	500mL Poly	W			X		1	
2	↓	1158	PSZB-88-7.5	X		4-oz glass jar	S			X		1	
3	↓	1216	PSZB-88-10	X		↓	↓			↓		1	
4	10-29-07	1253	PSZB-88-15	X		4-oz glass jar	S			X		1	

10-29-07

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	10-29-07	1340	SIGNATURE: Brett Kolb CEL	10/29/07	13:40
PRINTED NAME: Lucas Isaday			PRINTED NAME: Brett Kolb		
COMPANY: Geomatrix			COMPANY: CEL		
SIGNATURE: Brett Kolb	10/29/07	14:40	SIGNATURE: Sheo Toma		1440
PRINTED NAME: Brett Kolb			PRINTED NAME: Sheo Toma		
COMPANY: CEL			COMPANY: CEL 102907		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 4

SAMPLING COMMENTS:

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420
Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 10 - 2016

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geomatrix DATE: 10-24-07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
__✓__ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

__1.1__ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: BK

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: BK

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: BK

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 15, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-10-2016**		

This memorandum presents a summary data quality review of three primary soil samples and one equipment blank collected on October 29, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
20071029-EB	07-10-2016-1
PSZB-88-7.5	07-10-2016-2
PSZB-88-10	07-10-2016-3
PSZB-88-15	07-10-2016-4

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and at 1.1 °C, was lower the acceptable range of 4 +/- 2 °C. Sample results are not qualified based on this lower temperature.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable

2. Blanks – Acceptable
   One equipment blank was submitted with these samples and was free of contamination.

3. Laboratory Control Samples (LCS) – Acceptable

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-10-2016 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
20071029-EB	none			
PSZB-88-7.5	none			
PSZB-88-10	none			
PSZB-88-15	none			

Calscience
Environmental
Laboratories, Inc.

November 05, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-10-2089**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/30/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/30/07
Work Order No: 07-10-2089
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88-20	**07-10-2089-1**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-120	**07-10-2089-2**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	610	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-130	**07-10-2089-3**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	440	6.0	0.994		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-140	**07-10-2089-4**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	320	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-150	**07-10-2089-5**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	340	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-160	**07-10-2089-6**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	370	6.0	0.997		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/30/07
Work Order No: 07-10-2089
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-170	**07-10-2089-7**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	280	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-180	**07-10-2089-8**	**10/29/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	380	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-190	**07-10-2089-9**	**10/30/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	410	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-200	**07-10-2089-10**	**10/30/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	480	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-210	**07-10-2089-11**	**10/30/07**	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	700	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-220	**07-10-2089-12**	**10/30/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	550	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	10/30/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-2089
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-21-230	**07-10-2089-13**	**10/30/07**	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	620	6.0	1.00		ug/kg

Method Blank	099-12-654-4	N/A	Solid	LC/MS 1	10/30/07	10/31/07	071030L01

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

Method Blank	099-12-654-5	N/A	Solid	LC/MS 1	01/01/95	11/01/07	071031L01

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/30/07
Work Order No: 07-10-2089
Preparation: Cartridge
Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
07-10-2015-2	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	97	140	50-150	14	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.	Date Received: 10/30/07
250 East Rincon Street, Suite 204	Work Order No: 07-10-2089
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PDZB-21-190	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	91	97	50-150	2	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-10-2089
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-4	**Solid**	**LC/MS 1**	**10/30/07**	**10/31/07**	**071030L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	103	98	60-140	6	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-10-2089
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-5	**Solid**	**LC/MS 1**	**10/31/07**	**11/01/07**	**071031L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	100	96	60-140	4	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-10-2089

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD

10-2089 29 COR 10752

PROJECT NAME: AISA			DATE: ~~25~~ Oct 2007 PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: Calscience	CLIENT INFORMATION: GEOMATRIX	REPORTING REQUIREMENTS: RL 6 ug/kg
RESULTS TO: Rick Rees	LABORATORY ADDRESS:		
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Dan Burley		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): GR Rees

DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 8050	ANALYSES: 24hr TAT RUSH	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
10-29-07	1345	PSZB-88-20	X		4-oz glass jar	S			X		1	
10-29-07	14:35	PDZB-21-120	X		4 oz glass jar	S			X		1	
10-29-07	15:00	PDZB-21-130	X		4 oz glass jar	S			X		1	
10-29-07	15:05	PDZB-21-140	X		4 oz glass jar	S			X		1	
10-29-07	15:30	PDZB-21-150	X		4 oz glass jar	S			X		1	
10-29-07	15:40	PDZB-21-160	X		4 oz Glass jar	S			X		1	
10-29-07	16:10	PDZB-21-170	X		4 oz glass jar	S			X		1	
10-29-07	16:20	PDZB-21-180	X		4 oz glass jar	S			X		1	
10-30-07	07:40	PDZB-21-190	X		4 oz glass jar	S			X		1	
10-30-07	07:55	PDZB-21-200	X		4 oz glass jar	S			X		1	
10-30-07	08:35	PDZB-21-210	X		4 oz glass jar	S			X		1	
10-30-07	09:25	PDZB-21-220	X	X	4 oz glass jar	S			X		1	
10-30-07	10:10	PDZB-21-230	X	X	4 oz glass jar	S			X		1	

ISH

EFS 10-30-07

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	10-30-07	1527	SIGNATURE:	10-30-07	1522
PRINTED NAME: Lucas Budy			PRINTED NAME: William Batin		
COMPANY: Geomatrix			COMPANY: CEL		
SIGNATURE:	10-30-07	1625	SIGNATURE:	10-30-07	16:52
PRINTED NAME: William Batin			PRINTED NAME: Duke Nishihara		
COMPANY: CEL			COMPANY: CEL		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 13

SAMPLING COMMENTS: PDZB-21-220 and PDZB-21-230 are 24-hr RUSH

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 10 - 2089

Cooler 1 of 1

SAMPLE RECE PT IFORM

CLIENT: GEOMATRIX DATE: 10-30-07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
✓ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

2.6 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: WB

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: WB

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace			✓
Tedlar bag(s) free of condensation			✓

Initial: WB

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 15, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-10-2089**		

This memorandum presents a summary data quality review of thirteen primary soil samples collected on October 29 and 30, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PSZB-88-20	07-10-2089-1
PDZB-21-120	07-10-2089-2
PDZB-21-130	07-10-2089-3
PDZB-21-140	07-10-2089-4
PDZB-21-150	07-10-2089-5
PDZB-21-160	07-10-2089-6
PDZB-21-170	07-10-2089-7
PDZB-21-180	07-10-2089-8
PDZB-21-190	07-10-2089-9
PDZB-21-200	07-10-2089-10
PDZB-21-210	07-10-2089-11
PDZB-21-220	07-10-2089-12
PDZB-21-230	07-10-2089-13

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions

and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable
2. Blanks – Acceptable
3. Laboratory Control Samples (LCS) – Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable
5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-10-2089 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PSZB-88-20	none			
PDZB-21-120	none			
PDZB-21-130	none			
PDZB-21-140	none			
PDZB-21-150	none			
PDZB-21-160	none			
PDZB-21-170	none			
PDZB-21-180	none			
PDZB-21-190	none			
PDZB-21-200	none			
PDZB-21-210	none			
PDZB-21-220	none			
PDZB-21-230	none			

Calscience
Environmental
Laboratories, Inc.

November 07, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-10-2211**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/31/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	10/31/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-2211
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-7.5	**07-10-2211-1**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.994		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-10	**07-10-2211-2**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.993		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-15	**07-10-2211-3**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-20	**07-10-2211-4**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-25	**07-10-2211-5**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	5.9	0.991		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-30	**07-10-2211-6**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	12	6.0	0.998		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/31/07
Work Order No: 07-10-2211
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-35	**07-10-2211-7**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-89-40	**07-10-2211-8**	**10/30/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	5.9	0.991		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88A-25	**07-10-2211-9**	**10/31/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88A-30	**07-10-2211-10**	**10/31/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88A-35	**07-10-2211-11**	**10/31/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-88A-40	**07-10-2211-12**	**10/31/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.999		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	10/31/07
250 East Rincon Street, Suite 204		Work Order No:	07-10-2211
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-7.5	**07-10-2211-13**	**10/31/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/06/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	1100	30	4.97		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-10	**07-10-2211-14**	**10/31/07**	**Solid**	**LC/MS 1**	**11/01/07**	**11/06/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	970	30	4.94		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-6**	**N/A**	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 10/31/07
Work Order No: 07-10-2211
Preparation: Cartridge
Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PSZB-89-35	**Solid**	**LC/MS 1**	**11/01/07**	**11/02/07**	**071101S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	94	92	50-150	2	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: N/A
Work Order No: 07-10-2211
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-6	Solid	LC/MS 1	11/01/07	11/02/07	071101L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	101	98	60-140	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-10-2211

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD

(2211) COR 10833 PMT

PROJECT NAME: AISA

DATE: 30 Oct 2007 | PAGE 1 OF 2 1

PROJECT NUMBER: 7190.006

RESULTS TO: Rick Rees

TURNAROUND TIME: Normal

SAMPLE SHIPMENT METHOD:

LABORATORY NAME: CalScience

LABORATORY ADDRESS:

LABORATORY CONTACT: Don Bulley

LABORATORY PHONE NUMBER: 714-895-5494

CLIENT INFORMATION: Geomatrix

REPORTING REQUIREMENTS: Reporting Limit of 6 ug/kg

GEOTRACKER REQUIRED: YES (NO)

SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

ANALYSES: EPA 8260

	DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
1	10-30-07	1610	PSZB-89-7.5	4-oz glass jar	S			X		1	
2	10-30-07	1630	PSZB-89-10	4oz glass jar	S			X		1	
3	10-30-07	1635	PSZB-89-15	4-oz glass jar	S			X		1	
4	10-30-07	1645	PSZB-89-20	4-oz glass jar	S			X		1	
5	10-30-07	1700	PSZB-89-25	4-oz glass jar	S			X		1	
6	10-30-07	1710	PSZB-89-30	4-oz glass jar	S			X		1	
7	10-30-07	1720	PSZB-89-35	4-oz glass jar	S			X		1	
8	10-30-07	1730	PSZB-89-40	4-oz glass jar	S			X		1	
9	10.31.07	0845	PSZB-88A-25	4 oz Jar	S			X		1	
10	10.31.07	0853	PSZB-88A-30	4 oz Jar	S			X		1	
11	10.31.07	0912	PSZB-88A-35	4 oz Jar	S			X		J	
12	10.31.07	0920	PSZB-88A-40	4 oz Jar	S			X		1	
13	10.31.07	1053	PSZB-90-7.5	4 oz Jar	S			X		J	
14	10.31.07	1106	PSZB-90-10	4 oz Jar	S			X		J	

TOTAL NUMBER OF CONTAINERS: 14

SAMPLING COMMENTS:

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	10.31.07	1425	SIGNATURE:	10-31-07	14:25
PRINTED NAME: Paul Jeffers			PRINTED NAME: Brett Kolb		
COMPANY: Geomatrix			COMPANY: CEL		
SIGNATURE:	1031-07	17:15	SIGNATURE:		1715
PRINTED NAME: Brett Kolb			PRINTED NAME: Shon Fong		
COMPANY: CEL			COMPANY: CEL	10.31.07	
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 10 - 2211

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geomatrix DATE: 10-31-07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
✓ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

1.8 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: BK

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: BK

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: BK

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 15, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-10-2211**		

This memorandum presents a summary data quality review of fourteen primary soil samples collected on October 30 and 31, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PSZB-89-7.5	07-10-2211-1
PSZB-89-10	07-10-2211-2
PSZB-89-15	07-10-2211-3
PSZB-89-20	07-10-2211-4
PSZB-89-25	07-10-2211-5
PSZB-89-30	07-10-2211-6
PSZB-89-35	07-10-2211-7
PSZB-89-40	07-10-2211-8
PSZB-88A-25	07-10-2211-9
PSZB-88A-30	07-10-2211-10
PSZB-88A-35	07-10-2211-11
PSZB-88A-40	07-10-2211-12
PSZB-90-7.5	07-10-2211-13
PSZB-90-10	07-10-2211-14

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and at 1.8 °C, was lower than the acceptable range of 4 +/- 2 °C. Sample results were not qualified based on this lower temperature.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD)

results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable
2. Blanks – Acceptable
3. Laboratory Control Samples (LCS) – Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable
5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-10-2211 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PSZB-89-7.5	none			
PSZB-89-10	none			
PSZB-89-15	none			
PSZB-89-20	none			
PSZB-89-25	none			
PSZB-89-30	none			
PSZB-89-35	none			
PSZB-89-40	none			
PSZB-88A-25	none			
PSZB-88A-30	none			
PSZB-88A-35	none			
PSZB-88A-40	none			
PSZB-90-7.5	none			

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PSZB-90-10	none			

Calscience
Environmental
Laboratories, Inc.

November 08, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-11-0077**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/1/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/01/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0077
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006 Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-110	**07-11-0077-1**	**11/01/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	670	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-120	**07-11-0077-2**	**11/01/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	310	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-7**	**N/A**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.	Date Received: 11/01/07
250 East Rincon Street, Suite 204	Work Order No: 07-11-0077
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
07-11-0211-1	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	71	83	50-150	1	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: N/A
Work Order No: 07-11-0077
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-7	Solid	LC/MS 1	11/05/07	11/06/07	071105L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	94	95	60-140	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-11-0077

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD

(0077) COR 10839

PROJECT NAME: AISA			DATE: 1 Nov 2007 PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: Calscience	CLIENT INFORMATION:	REPORTING REQUIREMENTS:
RESULTS TO: Rick Rees	LABORATORY ADDRESS:		EPA 8850 = Reporting Limit of 6 ug/Kg
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Don Bueley		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 8850 Peachtree HOLD	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
11-01-07	1215	PDZB-20-110	X	4-oz glass jar	S			X		1	
11-01-07	1230	PDZB-20-120	X	4-oz glass jar	S			X		1	

11-3-01-07

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	11-01-07	1418	SIGNATURE:	11/01/07	14:18
PRINTED NAME: Lucas E. Buckley			PRINTED NAME: Alex Marquez		
COMPANY: Geomatrix			COMPANY: CEL		
SIGNATURE:	11/1/7	17:30	SIGNATURE:		1730
PRINTED NAME: Alex Marquez			PRINTED NAME: Shen Fong		
COMPANY: CEL			COMPANY: CEL	11-01-07	
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 2

SAMPLING COMMENTS:

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 11 - 0077

Cooler 1 of 1

SAMPLE RECE PT IFORM

CLIENT: Geomatrix DATE: 11/2/07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
✓ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

2.7 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: AM

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: AM

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: AM

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 15, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-11-0077**		

This memorandum presents a summary data quality review of two primary soil samples collected on November 1, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PDZB-20-110	07-11-0077-1
PDZB-20-120	07-11-0077-2

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable

2. Blanks – Acceptable

3. Laboratory Control Samples (LCS) – Acceptable

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-11-0077 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PDZB-20-110	none			
PDZB-20-120	none			

Calscience
Environmental
Laboratories, Inc.

November 08, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.: 07-11-0211**
Client Reference: AEROJET-AISA / 7190.006

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/2/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 11/02/07
Work Order No: 07-11-0211
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-130	**07-11-0211-1**	**11/01/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	640	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-140	**07-11-0211-2**	**11/01/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	69	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-150	**07-11-0211-3**	**11/02/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	160	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-160	**07-11-0211-4**	**11/02/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	170	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-170	**07-11-0211-5**	**11/02/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	96	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-190	**07-11-0211-6**	**11/02/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	110	6.0	0.998		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/02/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0211
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-180	**07-11-0211-7**	**11/02/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	160	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PDZB-20-200	**07-11-0211-8**	**11/02/07**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	92	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-7**	**N/A**	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.		Date Received:	11/02/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0211
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PDZB-20-130	**Solid**	**LC/MS 1**	**11/05/07**	**11/06/07**	**071105S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	71	83	50-150	1	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-11-0211
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-7	Solid	LC/MS 1	11/05/07	11/06/07	071105L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	94	95	60-140	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-11-0211

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD (0211) COR 10838

PROJECT NAME: AISA			DATE: 1 Nov 2007 PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: Cal Science	CLIENT INFORMATION:	REPORTING REQUIREMENTS:
RESULTS TO: Rick Rees	LABORATORY ADDRESS:		Reporting Limit for EPA 6850 is 6 ug/Kg
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Don Burley		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

	DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 6850	ANALYSES: 24HR TAT	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
	11-01-07	1420	PDZB-20-130	X		4-oz glass jar	S			X		1	Soil
	11-01-07	1445	PDZB-20-140	X		4-oz glass jar	S			X		1	
	11-02-07	0840	PDZB-20-150	X		4-oz glass jar	S			X		1	
	11-02-07	0852	PDZB-20-160	X		4-oz glass jar	S			X		1	
	11-02-07	0932	PDZB-20-170	X		4-oz glass jar	S			X		1	
SH→	11-02-07	1015	PDZB-20-190	X	X	4-oz glass jar	S			X		1	RUSH!
	11-02-07	0950	PDZB-20-180	X		4-oz glass jar	S			X		1	
SH→	11-02-07	1030	PDZB-20-200	X	X	4-oz glass jar	S			X		1	RUSH!

11-02-07

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	11-2-07	1500	SIGNATURE:	11/02/07	15:00
PRINTED NAME: Lucas Buday			PRINTED NAME: QUOC-NGUYEN		
COMPANY: Geomatrix			COMPANY: CAL SCIENCE LAB		
SIGNATURE:	11-02-07	16:50	SIGNATURE:	11/2/07	1650
PRINTED NAME: QUOC-NGUYEN			PRINTED NAME: Allen To		
COMPANY:			COMPANY: CEL		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 8

SAMPLING COMMENTS: 24Hr TAT for Samples PDZB-20-190 and PDZB-20-200.

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420
Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 11-0211

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GEOMATRIX DATE: 11-02-07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- _____ Chilled, cooler with temperature blank provided.
- ✓ Chilled, cooler without temperature blank.
- _____ Chilled and placed in cooler with wet ice.
- _____ Ambient and placed in cooler with wet ice.
- _____ Ambient temperature.

3.7 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- _____ °C Temperature blank.
- _____ °C IR thermometer.
- _____ Ambient temperature.

Initial: QN

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: QN

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: QN

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 15, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling Summary Data Quality Review – SDG 07-11-0211**		

This memorandum presents a summary data quality review of eight primary soil samples collected on November 1 and 2, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PDZB-20-130	07-11-0211-1
PDZB-20-140	07-11-0211-2
PDZB-20-150	07-11-0211-3
PDZB-20-160	07-11-0211-4
PDZB-20-170	07-11-0211-5
PDZB-20-190	07-11-0211-6
PDZB-20-180	07-11-0211-7
PDZB-20-200	07-11-0211-8

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable
2. Blanks – Acceptable
3. Laboratory Control Samples (LCS) – Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable
5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-11-0211 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PDZB-20-130	none			
PDZB-20-140	none			
PDZB-20-150	none			
PDZB-20-160	none			
PDZB-20-170	none			
PDZB-20-190	none			
PDZB-20-180	none			
PDZB-20-200	none			

Calscience
Environmental
Laboratories, Inc.

November 12, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.: 07-11-0281**
Client Reference: AEROJET-AISA / 7190.006

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/5/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/05/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0281
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006 Page 1 of 7

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-15	**07-11-0281-1**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	180	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-20	**07-11-0281-2**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	130	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-25	**07-11-0281-3**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	510	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-30	**07-11-0281-4**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	86	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-35	**07-11-0281-5**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	650	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-90-40	**07-11-0281-6**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	230	6.0	0.997		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 11/05/07
Work Order No: 07-11-0281
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-7.5	**07-11-0281-7**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.995		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-10	**07-11-0281-8**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-15	**07-11-0281-9**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-20	**07-11-0281-10**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-25	**07-11-0281-11**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.994		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-30	**07-11-0281-12**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	6.1	6.0	0.997		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.	Date Received: 11/05/07
250 East Rincon Street, Suite 204	Work Order No: 07-11-0281
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-35	**07-11-0281-13**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-91-40	**07-11-0281-14**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-7.5	**07-11-0281-15**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-10	**07-11-0281-16**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-15	**07-11-0281-17**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-20	**07-11-0281-18**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	50	6.0	1.01		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/05/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0281
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-25	**07-11-0281-19**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	120	6.0	0.992		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-30	**07-11-0281-20**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	44	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-35	**07-11-0281-21**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	80	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-92-40	**07-11-0281-22**	**11/03/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	21	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-7.5	**07-11-0281-23**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	130	6.0	0.994		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-10	**07-11-0281-24**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	82	6.0	0.998		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/05/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0281
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-15	**07-11-0281-25**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	59	6.0	0.992		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-20	**07-11-0281-26**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	82	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-25	**07-11-0281-27**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	82	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-30	**07-11-0281-28**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	39	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-35	**07-11-0281-29**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	99	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PSZB-93-40	**07-11-0281-30**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	72	6.0	0.996		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/05/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0281
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-7.5	**07-11-0281-31**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-10	**07-11-0281-32**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	16	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-15	**07-11-0281-33**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-20	**07-11-0281-34**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	10	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-25	**07-11-0281-35**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.994		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-30	**07-11-0281-36**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	9.1	6.0	0.998		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/05/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0281
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006 Page 7 of 7

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-35	**07-11-0281-37**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	15	6.0	0.999		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-40	**07-11-0281-38**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	21	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-45	**07-11-0281-39**	**11/05/07**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	54	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-8**	**N/A**	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	***099-12-654-9***	***N/A***	***Solid***	***LC/MS 1***	***11/06/07***	***11/09/07***	***071106L02***

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.	Date Received: 11/05/07
250 East Rincon Street, Suite 204	Work Order No: 07-11-0281
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project AERojet-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PSZB-91-30	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	89	82	50-150	9	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 11/05/07
Work Order No: 07-11-0281
Preparation: Cartridge
Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PSZB-93-35	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	78	71	50-150	3	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-11-0281
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-8	**Solid**	**LC/MS 1**	**11/06/07**	**11/09/07**	**071106L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	84	82	60-140	2	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-11-0281
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-9	Solid	LC/MS 1	11/06/07	11/09/07	071106L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	87	83	60-140	4	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-11-0281

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD (Q281) COR 10831

PROJECT NAME: AISA — DATE: 3 Nov 2007 — PAGE 1 OF 3

PROJECT NUMBER: 7190.006
RESULTS TO: Rick Rees
TURNAROUND TIME: Normal
SAMPLE SHIPMENT METHOD: Courier

LABORATORY NAME: CalScience
LABORATORY ADDRESS:
LABORATORY CONTACT: Dan Burley
LABORATORY PHONE NUMBER: 714-895-5494

CLIENT INFORMATION:

REPORTING REQUIREMENTS: Reporting Limit for EPA 6850 = 6 ug/kg
GEOTRACKER REQUIRED: YES (NO)
SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

ANALYSES: EPA 6850

	DATE	TIME	SAMPLE NUMBER	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
1	11-03-07	0756	PSZB-90-15	4-oz glass jar	S			X		1	
2	11-03-07	0800	PSZB-90-20	4-oz glass jar	S			X		1	
3	11-03-07	0815	PSZB-90-25	4-oz glass jar	S			X		1	
4	11-03-07	0822	PSZB-90-30	4-oz glass jar	S			X		1	
5	11-03-07	0835	PSZB-90-35	4-oz glass jar	S			X		1	
6	11-03-07	0840	PSZB-90-40	4-oz glass jar	S			X		1	
7	11-03-07	1040	PSZB-91-7.5	4-oz glass jar	S			X		1	
8	11-03-07	1045	PSZB-91-10	4-oz glass jar	S			X		1	
9	11-03-07	1110	PSZB-91-15	4-oz glass jar	S			X		1	
10	11-03-07	1117	PSZB-91-20	4-oz glass jar	S			X		1	
11	11-03-07	1138	PSZB-91-~~20~~25	4-oz glass jar	S			X		1	
12	11-03-07	1140	PSZB-91-30	4-oz glass jar	S			X		1	
13	11-03-07	1150	PSZB-91-35	4-oz glass jar	S			X		1	
14	11-03-07	1157	PSZB-91-40	4-oz glass jar	S			X		1	
15	11-03-07	1307	PSZB-92-7.5	4-oz glass jar	S			X		1	

TOTAL NUMBER OF CONTAINERS: 15 of 40

SAMPLING COMMENTS:

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	11-05-07	1530	SIGNATURE:	11.05.07	1530
PRINTED NAME: Lucas Buckley			PRINTED NAME:		
COMPANY: Geomatrix			COMPANY: CAL-SCIENCE		
SIGNATURE:	11-05-07	1653	SIGNATURE:		1653
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:	11/05/07	
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420
Geomatrix

CHAIN-OF-CUSTODY RECORD

(0281) COR 10835

PROJECT NAME: AISA			DATE: 3 Nov 2007 PAGE 2 OF 3
PROJECT NUMBER: 7190.006	LABORATORY NAME: Calscience	CLIENT INFORMATION:	REPORTING REQUIREMENTS: Reporting Limit of 6 ug/kg for EPA 8850
RESULTS TO: Rick Rees	LABORATORY ADDRESS:		
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Don Buell		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

	DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 8850	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
16	11-03-07	1312	PSZB-92-10	X	4-oz glass jar	S			X		1	
17	11-03-07	1337	PSZB-92-15	X	4-oz glass jar	S			X		1	
18	11-03-07	1340	PSZB-92-20	X	4-oz glass jar	S			X		1	
19	11-03-07	1357	PSZB-92-25	X	4-oz glass jar	S			X		1	
20	11-03-07	1403	PSZB-92-30	X	4-oz glass jar	S			X		1	
21	11-03-07	1417	PSZB-92-35	X	4-oz glass jar	S			X		1	
22	11-03-07	1420	PSZB-92-40	X	4-oz glass jar	S			X		1	
23	11-05-07	0915	PSZB-93-7.5	X	4-oz glass jar	S			X		1	
24	11-05-07	0917	PSZB-93-10	X	4-oz glass jar	S			X		1	
25	11-05-07	0900	PSZB-93-15	X	4-oz glass jar	S			X		1	
26	11-05-07	0908	PSZB-93-20	X	4-oz glass jar	S			X		1	
27	11-05-07	0938	PSZB-93-25	X	4-oz glass jar	S			X		1	
28	11-05-07	0948	PSZB-93-30	X	4-oz glass jar	S			X		1	
29	11-05-07	1015	PSZB-93-35	X	4-oz glass jar	S			X		1	
30	11-05-07	1019	PSZB-93-40	X	4-oz glass jar	S			X		1	

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	TOTAL NUMBER OF CONTAINERS: 15 of 40
SIGNATURE:			SIGNATURE:			SAMPLING COMMENTS:
PRINTED NAME: Lucas Buday	11-05-07	1530	PRINTED NAME:	11-05-07	1530	
COMPANY: Geomatrix			COMPANY: CAL-SCIENCE			
SIGNATURE:			SIGNATURE:			
PRINTED NAME: RUDY ENYEDI	11-5-07	1652	PRINTED NAME: Shen-Tama		1653	
COMPANY:			COMPANY: Cal 11.05.07			
SIGNATURE:			SIGNATURE:			
PRINTED NAME:			PRINTED NAME:			
COMPANY:			COMPANY:			

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Geomatrix

CHAIN-OF-CUSTODY RECORD (0281) COR 10836

PROJECT NAME: AIsA		DATE: 5 Nov 2007	PAGE 3 OF 3
PROJECT NUMBER: 7190.006	LABORATORY NAME: Cal Science	CLIENT INFORMATION:	REPORTING REQUIREMENTS: ~~EB6~~ EPA 6850 Reporting Limit = 6 ug/kg
RESULTS TO: Rick Rees	LABORATORY ADDRESS:		
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Don Burley		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): [signature]

ANALYSES

	DATE	TIME	SAMPLE NUMBER	EPA 6850	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
1	11-05-07	1250	PIZB-9-7.5	X	4-oz glass jar	S			X		1	
2	11-05-07	1255	PIZB-9-10	X	4-oz glass jar	S			X		1	
3	11-05-07	1324	PIZB-9-15	X	4-oz glass jar	S			X		1	
4	11-05-07	1328	PIZB-9-20	X	4-oz glass jar	S			X		1	
5	11-05-07	1346	PIZB-9-25	X	4-oz glass jar	S			X		1	
6	11-05-07	1350	PIZB-9-30	X	4-oz glass jar	S			X		1	
7	11-05-07	1414	PIZB-9-35	X	4-oz glass jar	S			X		1	
8	11-05-07	1416	PIZB-9-40	X	4-oz glass jar	S			X		1	
9	11-05-07	1452	PIZB-9-45	X	4-oz glass jar	S			X		1	
					4-oz glass jar	S			X		1	

[signature] 11-05-07

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE: [signature] PRINTED NAME: Lucas Budry COMPANY: Geomatrix	11-05-07	1530	SIGNATURE: [signature] PRINTED NAME: QUOC N COMPANY: CAL SCIENCE	11-05-07	1530
SIGNATURE: [signature] PRINTED NAME: QUOC N COMPANY:	11-05-07	1653	SIGNATURE: [signature] PRINTED NAME: Sh...Famo COMPANY: CEL	110507	1653
SIGNATURE: PRINTED NAME: COMPANY:			SIGNATURE: PRINTED NAME: COMPANY:		

TOTAL NUMBER OF CONTAINERS: 10 of 40

SAMPLING COMMENTS:

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420
Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 11 - 0281

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GEOMETRIX DATE: 11-05-07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- ✓ Chilled, cooler with temperature blank provided.
- ____ Chilled, cooler without temperature blank.
- ____ Chilled and placed in cooler with wet ice.
- ____ Ambient and placed in cooler with wet ice.
- ____ Ambient temperature.

3.6 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

- ____ °C Temperature blank.
- ____ °C IR thermometer.
- ____ Ambient temperature.

Initial: DN

CUSTODY SEAL INTACT:

Sample(s): ____ Cooler: ____ No (Not Intact) : ____ Not Present: ✓

Initial: DN

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			
Tedlar bag(s) free of condensation			✓

Initial: DN

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 15, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-11-0281**		

This memorandum presents a summary data quality review of thirty-nine primary soil samples collected on November 3 and 5, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PSZB-90-15	07-11-0281-1
PSZB-90-20	07-11-0281-2
PSZB-90-25	07-11-0281-3
PSZB-90-30	07-11-0281-4
PSZB-90-35	07-11-0281-5
PSZB-90-40	07-11-0281-6
PSZB-91-7.5	07-11-0281-7
PSZB-91-10	07-11-0281-8
PSZB-91-15	07-11-0281-9
PSZB-91-20	07-11-0281-10
PSZB-91-25	07-11-0281-11
PSZB-91-30	07-11-0281-12
PSZB-91-35	07-11-0281-13
PSZB-91-40	07-11-0281-14
PSZB-92-7.5	07-11-0281-15
PSZB-92-10	07-11-0281-16
PSZB-92-15	07-11-0281-17
PSZB-92-20	07-11-0281-18
PSZB-92-25	07-11-0281-19
PSZB-92-30	07-11-0281-2
PSZB-92-35	07-11-0281-21
PSZB-92-40	07-11-0281-22
PSZB-93-7.5	07-11-0281-23
PSZB-93-10	07-11-0281-24

Sample ID	Laboratory Sample ID
PSZB-93-15	07-11-0281-25
PSZB-93-20	07-11-0281-26
PSZB-93-25	07-11-0281-27
PSZB-93-30	07-11-0281-28
PSZB-93-35	07-11-0281-29
PSZB-93-40	07-11-0281-30
PIZB-9-7.5	07-11-0281-31
PIZB-9-10	07-11-0281-32
PIZB-9-15	07-11-0281-33
PIZB-9-20	07-11-0281-34
PIZB-9-25	07-11-0281-35
PIZB-9-30	07-11-0281-36
PIZB-9-35	07-11-0281-37
PIZB-9-40	07-11-0281-38
PIZB-9-45	07-11-0281-39

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable

2. Blanks – Acceptable
3. Laboratory Control Samples (LCS) – Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable
5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-11-0281 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PSZB-90-15	none			
PSZB-90-20	none			
PSZB-90-25	none			
PSZB-90-30	none			
PSZB-90-35	none			
PSZB-90-40	none			
PSZB-91-7.5	none			
PSZB-91-10	none			
PSZB-91-15	none			
PSZB-91-20	none			
PSZB-91-25	none			
PSZB-91-30	none			
PSZB-91-35	none			
PSZB-91-40	none			
PSZB-92-7.5	none			
PSZB-92-10	none			
PSZB-92-15	none			
PSZB-92-20	none			
PSZB-92-25	none			
PSZB-92-30	none			
PSZB-92-35	none			
PSZB-92-40	none			
PSZB-93-7.5	none			
PSZB-93-10	none			
PSZB-93-15	none			
PSZB-93-20	none			

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PSZB-93-25	none			
PSZB-93-30	none			
PSZB-93-35	none			
PSZB-93-40	none			
PIZB-9-7.5	none			
PIZB-9-10	none			
PIZB-9-15	none			
PIZB-9-20	none			
PIZB-9-25	none			
PIZB-9-30	none			
PIZB-9-35	none			
PIZB-9-40	none			
PIZB-9-45	none			

Calscience
Environmental
Laboratories, Inc.

November 13, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.: 07-11-0385**
Client Reference: AEROJET-AISA / 7190.006

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/6/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/06/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0385
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-50	**07-11-0385-1**	**11/05/07**	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	16	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-60	**07-11-0385-2**	**11/05/07**	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	36	6.0	0.995		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-70	**07-11-0385-3**	**11/05/07**	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	31	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-80	**07-11-0385-4**	**11/06/07**	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	13	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-90	**07-11-0385-5**	**11/06/07**	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	7.1	6.0	0.995		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
PIZB-9-100	**07-11-0385-6**	**11/06/07**	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	9.9	6.0	1.00		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/06/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0385
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-10**	**N/A**	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 11/06/07
Work Order No: 07-11-0385
Preparation: Cartridge
Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
PIZB-9-70	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	84	82	50-150	3	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-11-0385
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-10	**Solid**	**LC/MS 1**	**11/07/07**	**11/09/07**	**071107L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	81	79	60-140	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-11-0385

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD

(0385) COR 11099

PROJECT NAME: AISA		DATE: 5 Nov 2007	PAGE 1 OF 1
PROJECT NUMBER: 7190.006	LABORATORY NAME: Calscience	CLIENT INFORMATION:	REPORTING REQUIREMENTS: EPA6850 Reporting limit = 6ug/kg
RESULTS TO: Rick Ras	LABORATORY ADDRESS:		
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Von Burley		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE): [signature]

	DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA6850	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
1	11-05-07	1530	PIZB-9-50	X	4-oz glass jar	S			X		1	
2	11-05-07	1605	PIZB-9-60	X	4-oz glass jar	S			X		1	
3	11-05-07	1631	PIZB-9-70	X	4oz glass jar	S			X		1	
4	11-06-07	0845	PIZB-9-80	X	4-oz glass jar	S			X		1	
5	11-06-07	0952	PIZB-9-90	X	4-oz glass jar	S			X		1	
6	11-06-07	1020	PIZB-9-100	X	4oz glass jar	S			X		1	

[initials] 11-06-07

TOTAL NUMBER OF CONTAINERS: 6

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE: [signature] PRINTED NAME: Lucas Budny COMPANY: Geomatrix	11-06-07	1457	SIGNATURE: [signature] PRINTED NAME: BAC TA COMPANY: CEL	11/6/7	1452
SIGNATURE: [signature] PRINTED NAME: BAC - TA COMPANY: CEL	11/6/7	1650	SIGNATURE: [signature] PRINTED NAME: Sean Cama COMPANY: (Cal)	11-06-07	1650
SIGNATURE: PRINTED NAME: COMPANY:			SIGNATURE: PRINTED NAME: COMPANY:		

SAMPLING COMMENTS:

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 11 - 0385

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geomatrix DATE: 1/5/07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
✓ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
4.4 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial:

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial:

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial:

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 15, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa
SUBJECT:	**Aerojet Azusa - Soil Sampling** **Summary Data Quality Review – SDG 07-11-0385**		

This memorandum presents a summary data quality review of six primary soil samples collected on November 5 and 6, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
PIZB-9-50	07-11-0385-1
PIZB-9-60	07-11-0385-2
PIZB-9-70	07-11-0385-3
PIZB-9-80	07-11-0385-4
PIZB-9-90	07-11-0385-5
PIZB-9-100	07-11-0385-6

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable
2. Blanks – Acceptable
3. Laboratory Control Samples (LCS) – Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable
5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-11-0385 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
PIZB-9-50	none			
PIZB-9-60	none			
PIZB-9-70	none			
PIZB-9-80	none			
PIZB-9-90	none			
PIZB-9-100	none			

Calscience
Environmental
Laboratories, Inc.

November 19, 2007

Rick Rees
Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Subject: **Calscience Work Order No.:** **07-11-0861**
Client Reference: **AEROJET-AISA / 7190.006**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/12/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Don Burley
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/12/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0861
Corona, CA 92879-1363		Preparation:	N/A
		Method:	EPA 314.0

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
20071110-EB	**07-11-0861-1**	**11/10/07**	**Aqueous**	**IC 6**	**N/A**	**11/15/07**	**071114L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	3.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-203-701**	**N/A**	**Aqueous**	**IC 6**	**N/A**	**11/14/07**	**071114L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	3.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 11/12/07
Work Order No: 07-11-0861
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-2-1	**07-11-0861-2**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	140	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-2-2	**07-11-0861-3**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	390	6.0	0.993		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-1-1	**07-11-0861-4**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	290	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-1-2.5	**07-11-0861-5**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	200	6.0	0.994		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-1-5	**07-11-0861-6**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	0.997		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-1-7.5	**07-11-0861-7**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	49	6.0	0.995		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/12/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0861
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-1-10	**07-11-0861-8**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	17	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-4-1	**07-11-0861-9**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	100	6.0	0.998		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-4-2.5	**07-11-0861-10**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	1400	30	4.98		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-4-4.5	**07-11-0861-11**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	180	6.0	1		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-3-1	**07-11-0861-12**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	11	6.0	0.993		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-3-2.5	**07-11-0861-13**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	1300	30	4.99		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Geomatrix Consultants, Inc.		Date Received:	11/12/07
250 East Rincon Street, Suite 204		Work Order No:	07-11-0861
Corona, CA 92879-1363		Preparation:	Cartridge
		Method:	EPA 6850

Project: AEROJET-AISA / 7190.006

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-3-5	**07-11-0861-14**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	3000	60	9.98		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-3-7.5	**07-11-0861-15**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	170	6.0	1.00		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
B4-3-10	**07-11-0861-16**	**11/10/07**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	62	6.0	0.996		ug/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-654-11**	**N/A**	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	6.0	1		ug/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: 11/12/07
Work Order No: 07-11-0861
Preparation: N/A
Method: EPA 314.0

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
07-11-1042-1	**Aqueous**	**IC 6**	**N/A**	**11/14/07**	**071114S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	93	86	80-120	8	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Geomatrix Consultants, Inc.	Date Received: 11/12/07
250 East Rincon Street, Suite 204	Work Order No: 07-11-0861
Corona, CA 92879-1363	Preparation: Cartridge
	Method: EPA 6850

Project AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B4-3-2.5	**Solid**	**LC/MS 1**	**11/13/07**	**11/15/07**	**071114S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	68	72	50-150	1	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Geomatrix Consultants, Inc.		Date Received:	N/A
250 East Rincon Street, Suite 204		Work Order No:	07-11-0861
Corona, CA 92879-1363		Preparation:	N/A
		Method:	EPA 314.0

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-05-203-701	Aqueous	IC 6	N/A	11/14/07	071114L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	98	99	85-115	0	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Geomatrix Consultants, Inc.
250 East Rincon Street, Suite 204
Corona, CA 92879-1363

Date Received: N/A
Work Order No: 07-11-0861
Preparation: Cartridge
Method: EPA 6850

Project: AEROJET-AISA / 7190.006

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-654-11	Solid	LC/MS 1	11/13/07	11/15/07	071114L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Perchlorate	98	98	60-140	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-11-0861

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

CHAIN-OF-CUSTODY RECORD

(0861) COR 11098

PROJECT NAME: AISA			DATE: 10/01/2007 PAGE 1 OF 2
PROJECT NUMBER: 7190.006	LABORATORY NAME: CalScience	CLIENT INFORMATION:	REPORTING REQUIREMENTS: For EPA 8260 @ reporting limit of 6 ug/kg
RESULTS TO: Ricklas	LABORATORY ADDRESS:		
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Don Burley		GEOTRACKER REQUIRED YES (NO)
	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

SAMPLERS (SIGNATURE):

	DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 8260	ANALYSES: EPA 3140	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
1	11-1-07	0915	20071110-EB		X	500-mL Poly	W			X		1	
2		0935	B4-2-1	X		4-oz glass jar	S			X		1	
3		1013	B4-2-2	X									
4		1028	B4-1-1	X									
5		1054	B4-1-2.5	X									
6		1102	B4-1-5	X									
7		1113	B4-1-7.5	X									
8		1125	B4-1-10	X									
9		1150	B4-4-1	X									
10		1203	B4-4-2.5	X									
11		1215	B4-4-4.5	X									
12		1235	B4-3-1	X									
13		1250	B4-3-2.5	X									
14		1256	B4-3-5	X									
15	11-10-07	1305	B4-3-7.5	X		4-oz glass jar	S			X		1	

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	11-12-07	12:30	SIGNATURE:	11/12/07	12:30
PRINTED NAME: Lucas Burley			PRINTED NAME: Alex Marquez		
COMPANY: Geomatrix			COMPANY: CAL		
SIGNATURE:	11/12/07	13:30	SIGNATURE:		1330
PRINTED NAME: Alex Marquez			PRINTED NAME: Shen Loma		
COMPANY: CAL			COMPANY: CAL 11.12.07		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 15 of 16

SAMPLING COMMENTS:

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

CHAIN-OF-CUSTODY RECORD

(0861) COR 10756

PROJECT NAME: AISA			DATE: 10 Nov 2007 PAGE 2 OF 2
PROJECT NUMBER: 7190.006	LABORATORY NAME: CalScience	CLIENT INFORMATION:	REPORTING REQUIREMENTS: For EPA 6850 a reporting limit of 6 ug/kg
RESULTS TO: Rick Lees	LABORATORY ADDRESS:		
TURNAROUND TIME: Normal			
SAMPLE SHIPMENT METHOD: Courier	LABORATORY CONTACT: Don Burley		GEOTRACKER REQUIRED YES (NO)
SAMPLERS (SIGNATURE):	LABORATORY PHONE NUMBER: 714-895-5494		SITE SPECIFIC GLOBAL ID NO.

	DATE	TIME	SAMPLE NUMBER	ANALYSES: EPA 6850	CONTAINER TYPE AND SIZE	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	Preservative Type	Cooled	MS/MSD	No. of Containers	ADDITIONAL COMMENTS
16	11-10-07	1315	B4-3-10	X	4-oz glass jar	S			X		1	

11-10-07

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE:	11-12-07	12:37	SIGNATURE:	11/12/07	12:37
PRINTED NAME: Lucas Buday			PRINTED NAME: Alex Mangan		
COMPANY: Geomatrix			COMPANY: CEL		
SIGNATURE:	11/12/07	13:30	SIGNATURE:		1330
PRINTED NAME: Alex Mangan			PRINTED NAME: Shea Lama		
COMPANY: CEL			COMPANY: CEL 11.12.07		
SIGNATURE:			SIGNATURE:		
PRINTED NAME:			PRINTED NAME:		
COMPANY:			COMPANY:		

TOTAL NUMBER OF CONTAINERS: 1 of 16

SAMPLING COMMENTS:

250 East Rincon Street, Suite 204
Corona, California 92879-1363
Tel 951.273.7400 Fax 951.273.7420

Geomatrix

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 11 - 0861

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GeoMatrix DATE: 11/18/07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
✓ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

2.1 °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: MM

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Present: ✓

Initial: AM

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: AM

COMMENTS:

Geomatrix

Memorandum

TO:	Rick Rees	**DATE:**	November 23, 2007
FROM:	Crystal Neirby	**PROJ. NO.:**	7190
CC:	Project File	**PROJ. NAME:**	Aerojet – Azusa

SUBJECT: **Aerojet Azusa - Soil Sampling**
Summary Data Quality Review – SDG 07-11-0861

This memorandum presents a summary data quality review of fifteen primary soil samples and one equipment blank collected on November 10, 2007. The samples were submitted to Calscience Environmental Laboratories, a State of California certified laboratory, located in Garden Grove, California. The samples were analyzed for Perchlorate by EPA Method 6850.

The sample IDs and the associated laboratory sample IDs are listed in the table below.

Sample ID	Laboratory Sample ID
20071110-EB	07-11-0861-1
B4-2-1	07-11-0861-2
B4-2-2	07-11-0861-3
B4-1-1	07-11-0861-4
B4-1-2.5	07-11-0861-5
B4-1-5	07-11-0861-6
B4-1-7.5	07-11-0861-7
B4-1-10	07-11-0861-8
B4-4-1	07-11-0861-9
B4-4-2.5	07-11-0861-10
B4-4-4.5	07-11-0861-11
B4-3-1	07-11-0861-12
B4-3-2.5	07-11-0861-13
B4-3-5	07-11-0861-14
B4-3-7.5	07-11-0861-15
B4-3-10	07-11-0861-16

Upon receipt by Calscience, the sample jar information was compared to the chain-of-custody form. The temperature of the cooler was recorded as part of the check-in procedure, and was within the acceptable range of 4 +/- 2 °C.

Data were reviewed in accordance with the appropriate method procedures. Hold times, method blanks, laboratory control samples (LCS), matrix spike/matrix spike duplicate (MS/MSD) results, and reporting limits were reviewed to assess compliance with applicable methods. If data qualification was required, data were qualified in general accordance with the definitions and use of qualifying flags outlined in the following EPA documents: USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, October 1999.

Samples were analyzed for perchlorate by the method identified in the introduction to this report, and were evaluated for the following criteria.

1. Holding Times – Acceptable

2. Blanks – Acceptable
   One equipment blank was submitted with these samples and was free of contamination.

3. Laboratory Control Samples (LCS) – Acceptable

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The Calscience SDG 07-11-0861 is 100 percent complete. The data usability is based on EPA's guidance documents. No problems were identified and analytical performance was generally within specified limits. The data are acceptable and meet the project's data quality objectives.

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
20071110-EB	none			
B4-2-1	none			
B4-2-2	none			
B4-1-1	none			
B4-1-2.5	none			
B4-1-5	none			
B4-1-7.5	none			
B4-1-10	none			
B4-4-1	none			

Sample ID	Qualified Analyte	Qualified Result	Units	Qualifier Reason
B4-4-2.5	none			
B4-4-4.5	none			
B4-3-1	none			
B4-3-2.5	none			
B4-3-5	none			
B4-3-7.5				
B4-3-10				